School Shop

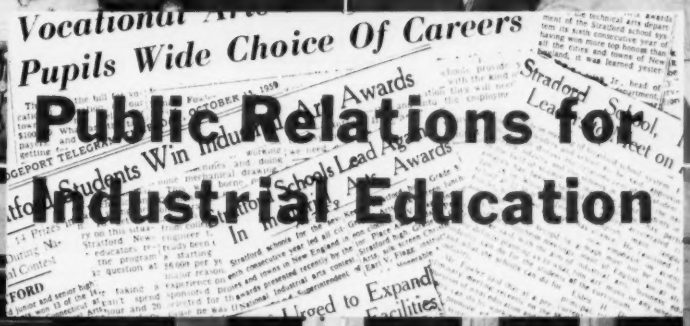
vol. XIX no. 8

APRIL 1960

PUBLIC RELATIONS FOR INDUSTRIAL EDUCATION

Suppliers Directory
New Instructional Materials
Directory of Officials

Cover story: Many different publics need to know about industrial education if its story is to be told effectively. Illustrated here are some of them, such as school administrators, parents, and an advisory committee from industry. Newspaper clippings and display case symbolize methods you can use to inform people about industrial education. For a full discussion see pages 21-46.



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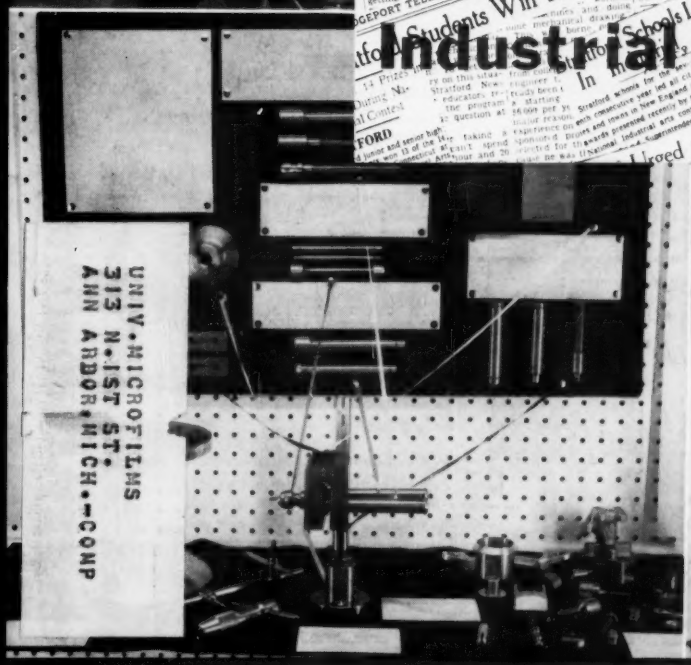

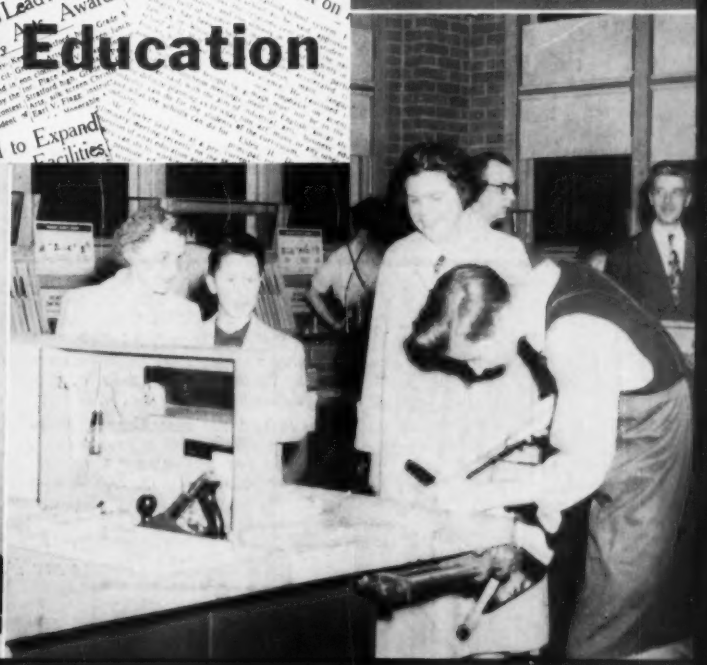

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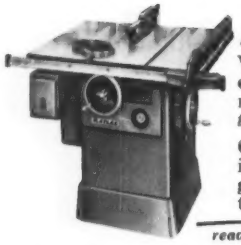

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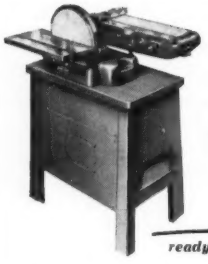

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School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

Let There Be Light!

For too long we in industrial education have assumed that a public-relations program was a nice and a desirable thing to have but we have done precious little about it. Once in awhile we have talked to the PTA or shown off the shop facilities to parents in an evening open-house program and pretty much let it go at that.

Actually we have a responsibility and a duty to inform the public about what we are doing and are trying to do, because industrial education is supported and financed by the people and they have a right to know what it is that they are paying for. Shop teachers and supervisors have an obligation to present to the people and to their representatives on the board of education an explanation of what their taxes are providing educationally for the young people of the community.

Old-line superintendents of schools of a bygone generation used to try to keep as quiet as possible about what went on in schools because they did not want to "stir up the public." They felt that they knew how to run things and the less the public became concerned, the less conflict and criticism would arise. Unfortunately there are some industrial-education people and administrators who follow the same line today. They have not recognized that they have an obligation to the public and are actually cynical about the public interest.

Do people – and "people" covers a lot of territory such as the general public, other subject-matter teachers, administrators, parents, labor, management, and others – really know what your industrial-education program is trying to do?

You and I know what the answer for the average citizen is – "No."

The partially informed person, whether he or she be connected with the schools or not, may have some interesting misconceptions. We all know of people who have a vague idea that the school shop is almost any of the following: a project factory, a detention area, a craft or hobby shop, a home-mechanics shop, a place where carpenters are trained, or a shop where youngsters make breadboards and bookends.

Every survey we have seen of public conceptions of industrial education shows that most people think industrial education is primarily trade training, if they have any notion about it at all. Moreover, most men think in terms of their own experience in shop classes which was mostly confined to drafting and woodworking. The women do not even have this hazy recollection to fall back on.

All of this raises the corollary and sometimes embarrassing question of whether you, as industrial educator, have a clear-cut and well-defined concept of industrial education. If not, you should have one in writing and the students in your department should be given an idea of what it contains.

Industrial education is a part of a whole pattern of public education and a public-relations program should show an awareness of this affiliation. The shop program is dependent on the other components of the educational program and without coordination with them can be that much less effective. This needs to be recognized and a conscious effort made to demonstrate it.

Mere "publicity" is not a public-relations program, as is pointed out elsewhere in this issue. What we are after is public understanding. Politicians and show-business characters are happy if they get publicity, whether it is good or bad. What they are seeking is "notice" and not "understanding." Understanding only comes through an honest and straightforward presentation of the facts. A good public-relations program takes the public into its confidence and shares shortcomings as well as successes.

Such understanding only comes through a constant and continuous effort to tell all to everybody. The make-up of the various publics changes, people forget, and industrial education changes. *Keeping everlastingly at it* is the only policy that will bring even partial success.—*L.W.P.*

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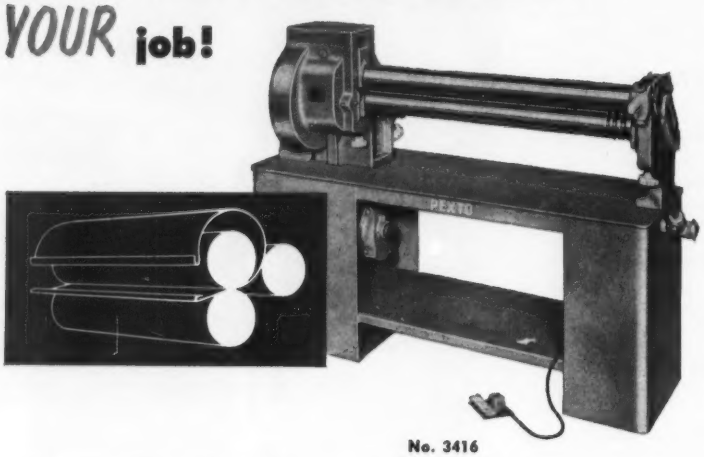

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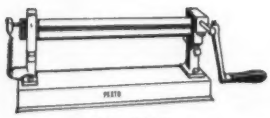

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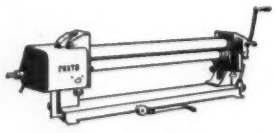

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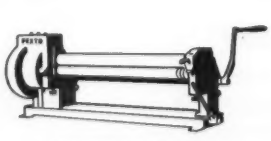

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IN THE MORNING MAIL...

(Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Dear Sir:

As a mother of two sons, and as one who is greatly interested in the public schools of America, it is with a feeling of urgency that I write this letter.

I have always felt that every boy should have the opportunity to learn the use of tools and materials; to understand the problems of a manual worker; to appreciate the real beauty of craftsmanship; to have the chance to explore and develop his own skills.

For this reason, I looked forward with our sons to their experiences in the industrial-arts classes in junior-high school. However, in the case of our older son the experience was one of complete frustration, with the end result being a conviction on his part that it had been a waste of time. This was, unfortunately, only too true.

One whole semester of seventh grade, which was spent in a woodworking shop, was devoted to the making of an old-fashioned window stop. Nothing else was even attempted. In this day and age of casement windows, Thermopane glass, aluminum windows, etc., can you think of anything more discouraging? The other three semesters spent in other areas of work were not much better. Needless to say, this experience ended all desire to go on with any further work in the school shop.

When it was time for our younger son to enter junior-high school, we had moved to another community, and so it was with renewed interest, and even hope, that I watched his entry into industrial arts. He has now finished two years of study in the area, and, with the exception of two nine-week exploratory periods (one in mechanical drawing, the other in homemaking), his experience has been as frustrating as that of our older son. This time one of the teachers said the only thing he was interested in was quantity and the more projects one made the better grade he received. The projects were all made at home because the instructor took the entire period "explaining procedures." This meant, really, just talking and putting in time.

We live in a community from which 75 percent of its high-school graduates go on to college. Does this mean that the industrial-arts teachers think it isn't necessary for boys to know the use of simple tools, the rudimentary knowledge of metalworking and woodworking? To me, this is a basic part of their general education and it is a sad commentary on the industrial-arts program that no one takes an elective course in it.

I feel that until the quality of instruction is improved, until the industrial-arts *teachers themselves* value the work they teach, this program will go steadily down hill.

Please don't think I am citing rare and isolated incidents. I have taken the trouble to talk with people in many communities other than our own, and the majority of people feel the way I do.

This letter is written with the hope that the profession will take some positive action to keep alive and vitalize a program that should be so worthwhile in our schools.

(My husband's position makes it mandatory that I do not sign my name.)

Disenchanted but
Hopeful Mother

Dear Sir:

In the January issue of SCHOOL SHOP you published an article "A Course of Study Gives Direction," written by Richard P. Hamilton. This article is a very significant contribution to the industrial teaching profession, and I would like to use it in my work with 180 industrial teachers. . . .

W. T. Reed,
Trade and Industrial Education,
Virginia State College,
Petersburg, Va.

Dear Sir:

As a result of the news item "Illinois Expands Tech Programs" in the "News about Training the Technician" columns of the December issue of SCHOOL SHOP, I received an inquiry from an Illinois administrator asking for information about curriculum content in one of our programs. It is just possible that another technical-education program may result from this inquiry.

We in Illinois are probably no different than any other recipients of SCHOOL SHOP. The first section we turn to is under the heading "From Washington." Of course the next in my range of interest is "News about Training the Technician."

You and your staff are to be commended for this splendid informative service to vocational education.

Walter J, Bartz,
Chief, Technicial Education,
State Board of Vocational Education,
Springfield, Ill.

Dear Sir:

Your editorial "The Dumping Ground" in the November issue really rang a bell. Several years ago at an industrial-arts workshop, I was practically ostracized for the following attitude, so I might as well go all the way.

The shops are not the "dumping grounds"; they are the "saving grounds" of the schools. If we shop teachers don't take care of these students, who will?

Let's change the attitude and all things will be better.

P. Almon Heyliger,
Lawrence High School,
Falmouth, Mass.

Dear Sir:

I look forward to each issue of SCHOOL SHOP and read it from cover to cover. Quite often I find articles and items that I am able to use in my own shop.

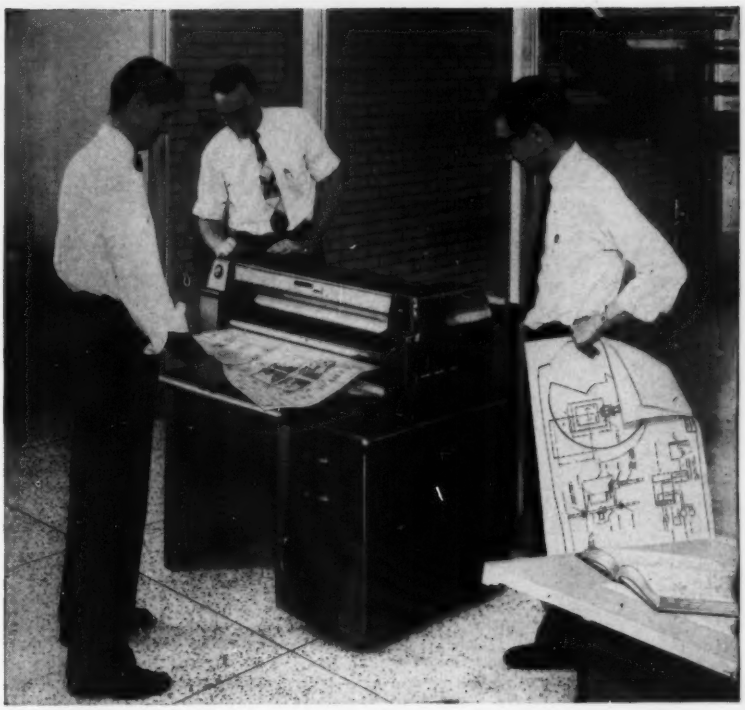
In the January issue, Richard H. Snow of Scottsdale, Ariz., suggested that the cartoons published in your magazine be printed on a separate sheet for posting on bulletin boards. I second his suggestion and hope it can be accomplished.

Le Roy Higgins,
Indian Hills Junior High School,
Prairie Village, Kan.

Dear Sir:

Allow me to thank you for the privilege of receiving SCHOOL SHOP monthly. I have nothing but encomiums for the publication. The magazine is invaluable as an aid to the teaching of industrial arts. And as a source for up-to-date material for teachers, SCHOOL SHOP, in my opinion, surpasses all others.

H. Gittelman
J.H.S. 118,
Bronx, New York



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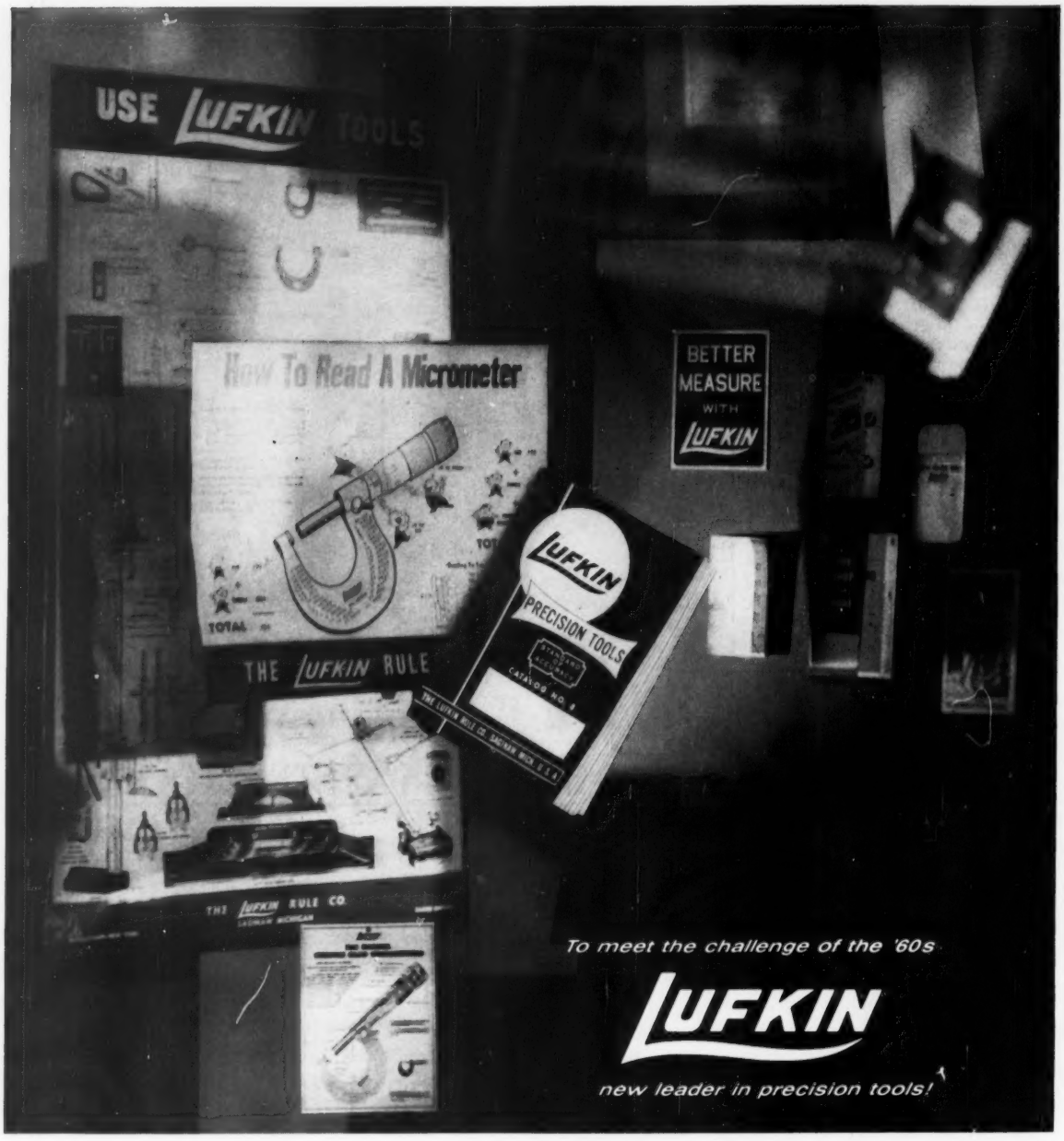

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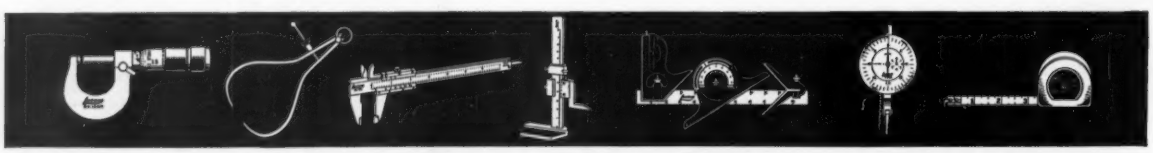
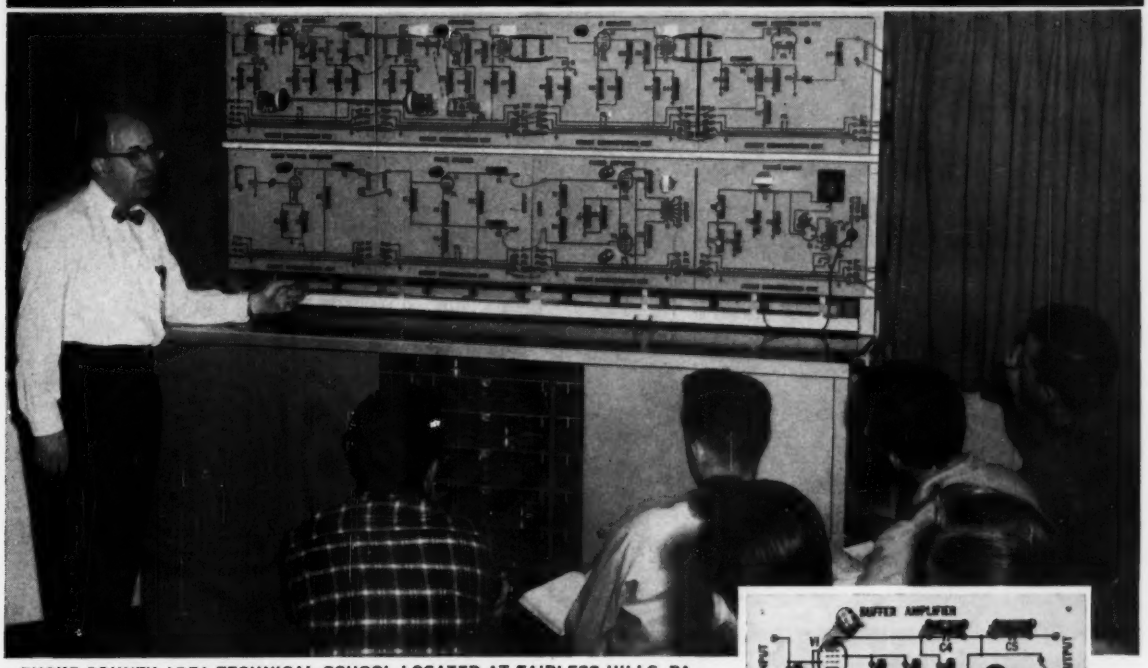


Electronics Programs for Your School
COMPLETE IN ONE PACKAGE



BUCKS COUNTY AREA TECHNICAL SCHOOL LOCATED AT FAIRLESS HILLS, PA.,
GEORGE M. SCHAFFER, PRINCIPAL

Courses are fully organized . . . lecture demonstrations, experiments, workbooks and tests all correlated with text books

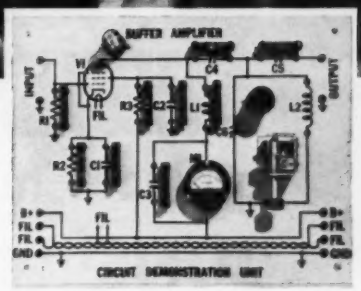
Philco Electronics Training Packages employ proven methods to make teaching easier and give students a better understanding of electronics theory and applications.

The Philco Electronics Classroom Demonstrator presents the circuits of electronics theory and equipment a step at a time with easily learned "building block" circuit panels. Students learn and understand electronics better when presented in this simplified circuit by circuit manner. When students fully understand each basic circuit, their functions and relationships to the system are easy to comprehend as the "building blocks" are combined one by one on the rack of the console demonstrator to form complete and functioning electronics equipments and systems. Students learn by doing with lab chassis that correspond to each "building block" circuit panel.

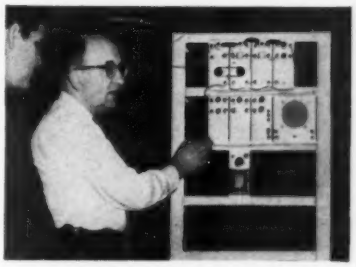
Classroom demonstrations, laboratory experiments and tests are completely organized for the teacher in the instructor's manual . . . and all are correlated with the text book. Students' workbooks provide direction and guidance.

The console houses as many as 40 different "building block" panels in its cabinet base. Entire console unit moves easily on its own casters and plugs into any regular A.C. outlet. No building modifications needed.

A variety of one, two and three year programs geared to modern technologies are available. Programs can be tailored to suit the specific training needs of any school or community.



Building Block Circuit Panel—Each is a basic circuit . . . function and relationship to entire system are easily explained as it is added on the demonstrator.

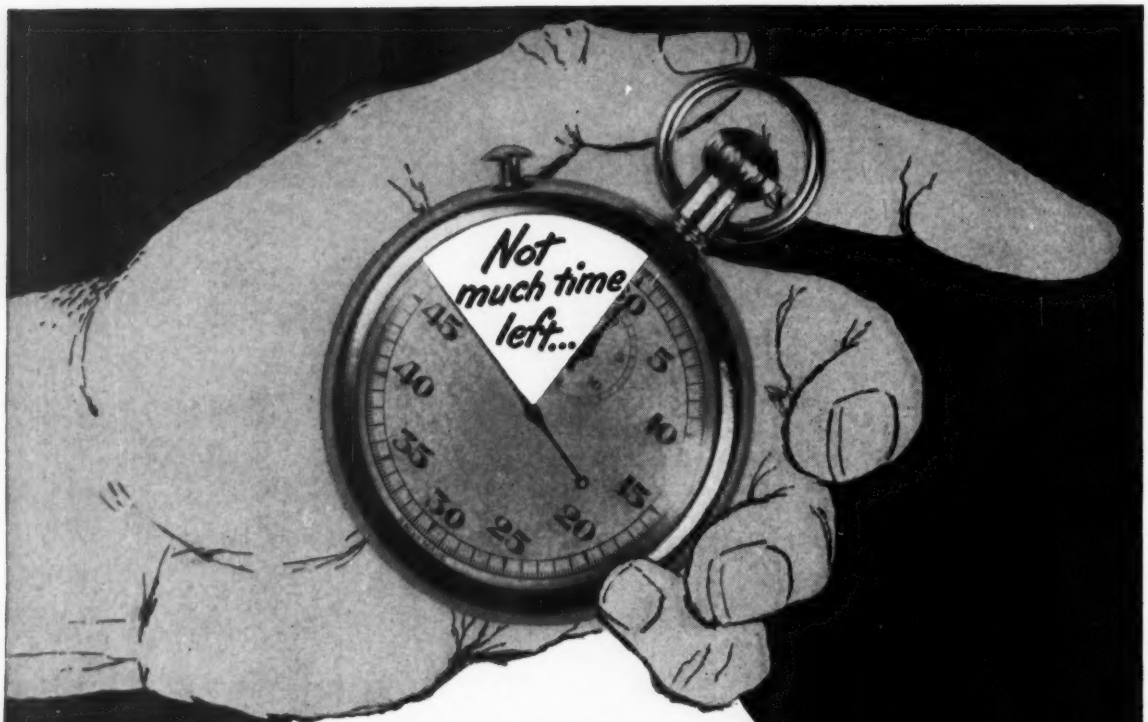


Matching Lab Units—For each "building block" circuit panel there is a matching lab chassis, a complete and operating counterpart unit for laboratory experimentation.

For further information, please write:

PHILCO® TECHREP Division

"C" and Ontario Streets **P.O. Box 4730, Philadelphia 34, Pennsylvania**



1960 FORD iaa

projects must be received by

JUNE 10* or JUNE 25**

There's still time for talented student-teacher teams to enter the 1960 Ford IAA competition and win national recognition and valuable prizes. But those who wait too long may be disappointed!

The only project of its kind, the IAA offers students the opportunity to share in $50,000 prize money . . . and awards 32 outstanding students *and their teachers* exciting all-expense-paid trips to dynamic Detroit—the industrial capital of the world.

Any high-quality industrial arts or industrial vocational project made by students in the 7th through 12th grades is eligible. Just fill out the coupon below and send it in for entry blank and rules booklet. But hurry . . . it's later than you think!

CLOSING DATE:

***JUNE 10**

Salt Lake City—for projects made in Montana, Wyoming, Colorado, New Mexico, and states farther west

CLOSING DATE:

****JUNE 25**

Dearborn, Michigan—
for projects made in all other states

INDUSTRIAL ARTS AWARDS FORD MOTOR COMPANY

FORD INDUSTRIAL ARTS AWARDS, Dept. D
FORD MOTOR COMPANY, The American Road, Dearborn, Michigan

I would like to have the official IAA rules booklet and entry blanks. Please send to:

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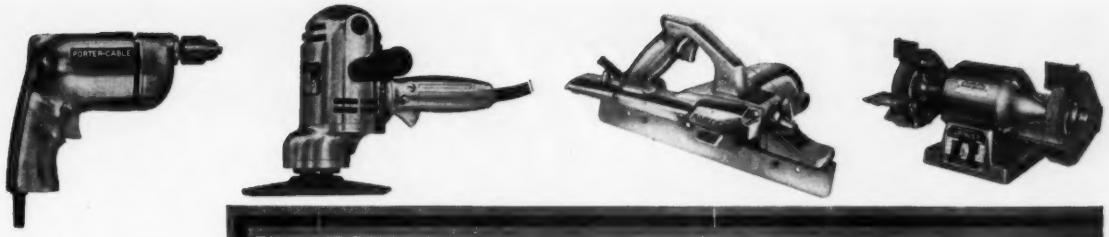
CITY_____ ZONE____ STATE_____



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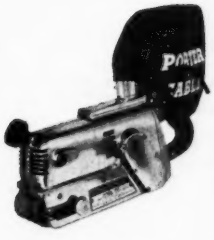
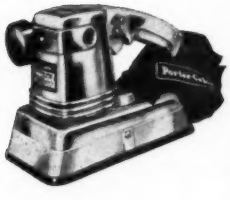
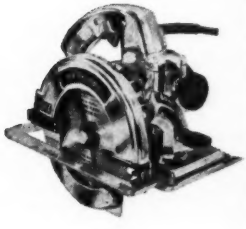
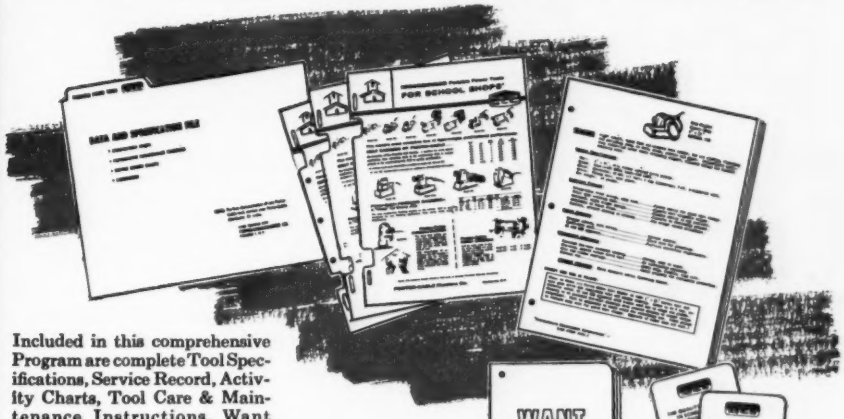
"The Quality Standard in school shops for over 50 years"

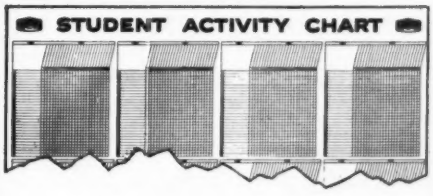


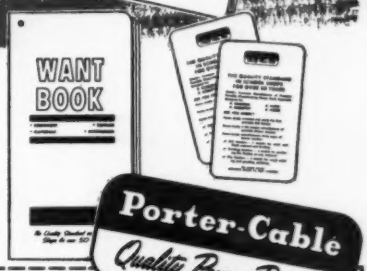






Included in this comprehensive Program are complete Tool Specifications, Service Record, Activity Charts, Tool Care & Maintenance Instructions, Want Book, Belt Chart, Tool Accessory Lists, descriptive Catalog Sheets.





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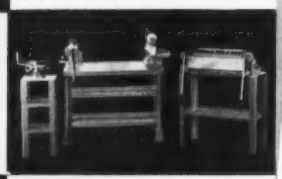

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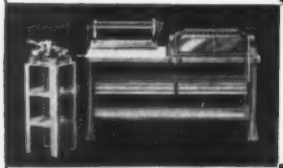

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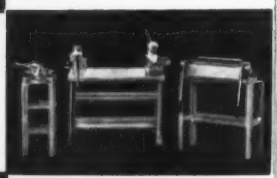

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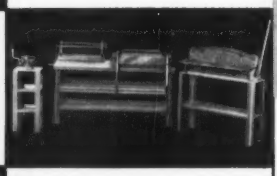
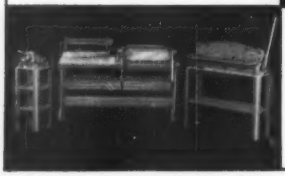
DEAL NO. 5, $1555.00
Same as Deal No. 1 except Spartan 36" Shear on separate stand instead of 24" Shear on table. SAVE $175.50



DEAL NO. 6, $1245.00
Same as Deal No. 2 except Spartan 36" Shear on separate stand instead of 24" Shear on table. SAVE $138.00



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A wise investment for your school's tool fund is a Di-Acro "package deal". You can save up to 10% when you purchase several Di-Acro Precision Machines in a package rather than spread individual purchases over a number of years. Now you can have first class equipment at a money saving price. Each machine is specially designed to make teaching easier and to last longer. Individual stands are of welded, steel construction. Machinery tables are heavy gauge steel, braced for added strength and predrilled for mounting machines. All machines are backed by a one year warranty.

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Now with the purchase of a Di-Acro Precision Machine, you receive valuable coupons worth free project materials. With the purchase of a "package deal" you receive proportionately more coupons.

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For over a half-century instructors have strongly praised South Bend Lathes for vocational training. Let us tell you why this has been justified . . . just mail the coupon.

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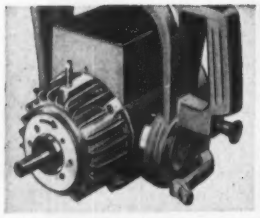
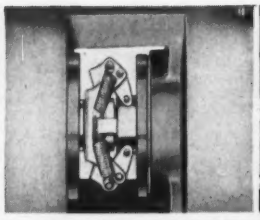
Give your students a head start for the years ahead

...train them with the

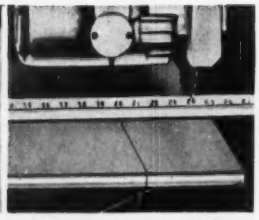
NEW 1030 DeWALT®



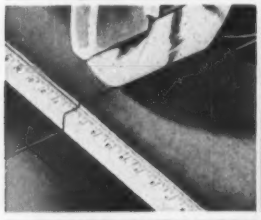
NEW! TOTALLY-ENCLOSED, DIRECT-DRIVE MOTOR, runs on 120/240 volts, AC.



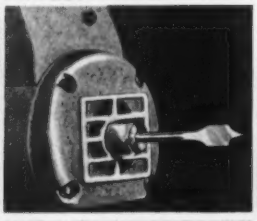
NEW! BUILT-IN ROTO-GRIP Brake, stops tools with electro-mechanical action.



NEW! DROP-LEAF SAF-T-TABLE up front protects operator on wide cuts.(optional)

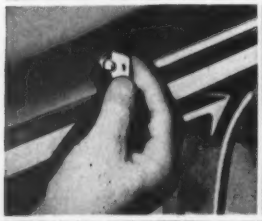


NEW! CUT-OFF SCALE on guide fence makes "repeat" cross-cuts easy.

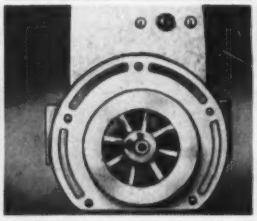


NEW! DUAL-ARBOR MOTOR SHAFT uses right hand tools on back end arbor.

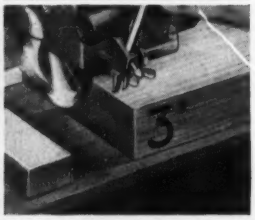
NEW! MOTOR TILTS FULL 360°, multiplies range of shop jobs, adds flexibility.



NEW! "CAM-TYPE" SAFETY KEY SWITCH, works in any direction, protects your students.



NEW! PATENTED COOLING SYSTEM pushes cool air through motor slots at 30 CFPM.



NEW! EXTRA BIG CAPACITY. 10" saw cuts 3" deep, rips over 24" wide on panel stock.

NOW...more than ever...you'll make DeWalt your No. 1 choice for industrial arts and vocational training. This new 1030 DeWalt brings still greater safety, versatility and accuracy plus other extras.

Plan now to include a 1030 DeWalt in your next purchase requisition. Here's a condensed specification guide:

- 10" saw, radial type, model 1030 DeWalt.
- Uniform cantilever arm rotates 360° around the column.
- All operating adjustments and set-ups above the work table.
- Grease-shielded ball bearing head rides on machined trackways inside arm.
- Totally-enclosed, direct-drive, fan-cooled motor delivers 3 H.P.
- Built-in, electro-mechanical brake.
- Cut-off, miter, bevel and rip scales.
- Safety "Cam-Type" key switch.
- 26"x34" steel base with welded handles and 4 detachable legs.
- Big 26"x36" work top with drop-leaf board.
- 10" saw and Auto-Float safety guard with exhaust nozzle and anti-kickback pawl.

(Specify electrical characteristics required)

Compare! See the new 1030 DeWalt demonstrated at your nearby dealer's store. Write for catalog, DeWalt, Dept. SS-604, Lancaster, Pa.

NEW DESIGN...NEW SAFETY...EXTRA POWER
MAKE IT EXTRA EASY FOR STUDENTS TO USE!

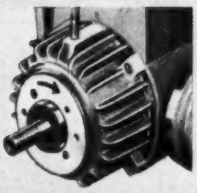
CSA APPROVED

Auto-Float Guard
and Drop-Leaf Table
(OPTIONAL)

MODEL "1030" AMF DEWALT POWER SHOP*

*T. M. DeWalt Division

1st



TOTALLY-ENCLOSED MOTOR
direct-drive delivers 3 H.P.
EXTRA POWER WHEN NEEDED!

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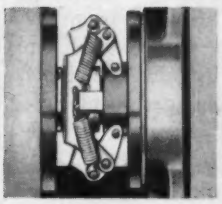

BUILT-IN ROTO-GRIP BRAKE
stops motor instantly
EXTRA SAFETY FOR STUDENTS!

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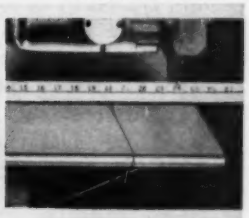
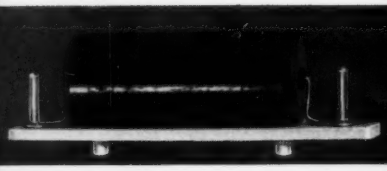


DROP-LEAF SAFETY TABLE
eliminates exposed saw up-front
EXTRA SAFETY FOR STUDENTS!

"My Students Learn Electricity and Electronics Easier with the ErecTronic® System"

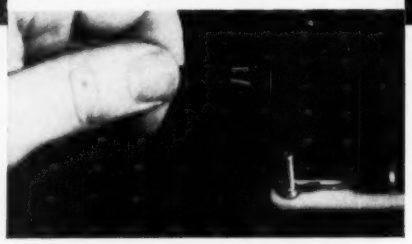
Mr. Stanley Gardner, electronics instructor at Newton Technical High School, Newton, Mass., whose statement appears above, is shown observing two students who are constructing a circuit from an EIA Manual.

Here's Why ErecTronic Kits Make Learning and Teaching Easier!



Components and other parts are factory-mounted on high-impact polystyrene bases which have two plug-in pins.

Precision-drilled Duron lids provide working surface which holds mounted parts firmly, yet allows easy removal.

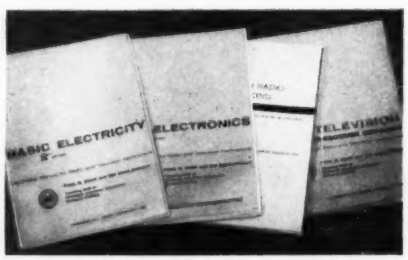


This phosphor bronze Jiffy Connector used in ErecTronic Kits has made over 7,000 positive electrical connections. It still retains its initial resiliency.

The ErecTronic System of Laboratory Instruction makes the teaching and learning of basic electricity and electronics fast and practical. Students can build and rebuild circuits on a peg board without soldering with simple plug-in mounted components and Jiffy connectors. Supervision and checking time is reduced. Working from Electronic Industries Association Manuals, students can build circuits as fast as they can think.

These EIA (formerly RETMA) Manuals provide a laboratory program of over 125 jobs in logical sequence from which the student learns basic technical knowledge starting with Ohm's Law and progressing to television receivers, including transistors.

ErecTronic Kits are economical because parts can be used over and over again, and silk screen storage panels provide quick visual inventory check. Write today for new Catalog ED-6.



Training Kits, designed for use with the clear, concise Laboratory Manuals prepared by the teaching staff of EIA, are available.

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195 MASSACHUSETTS AVENUE, CAMBRIDGE 39, MASS.

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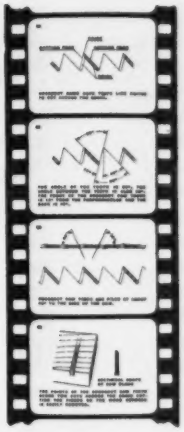

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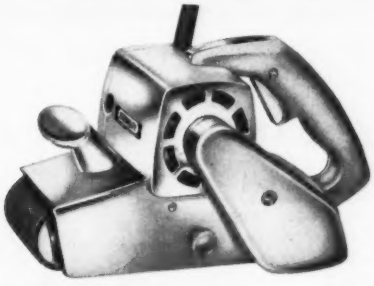

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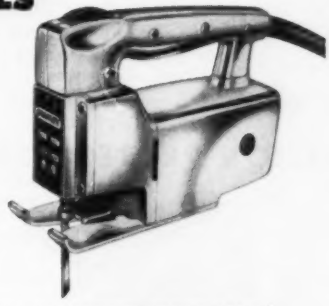

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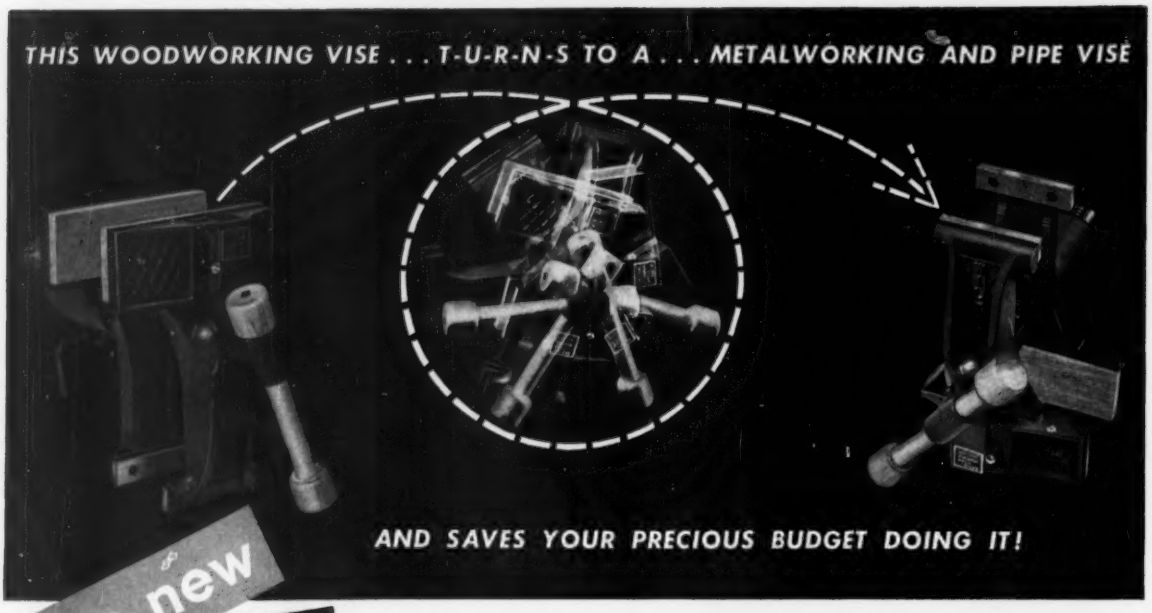

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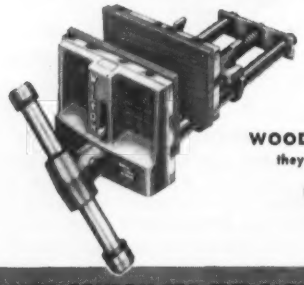

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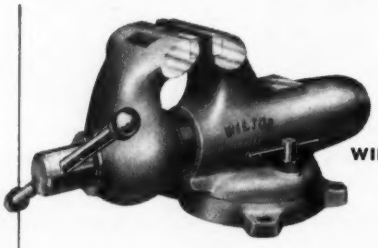

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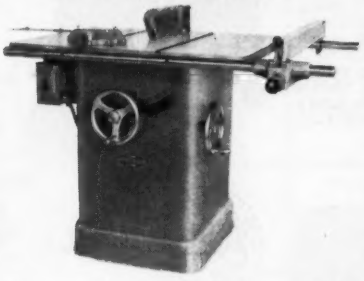

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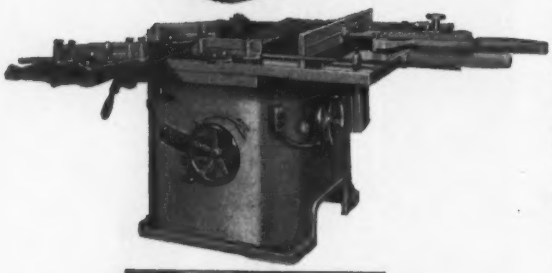

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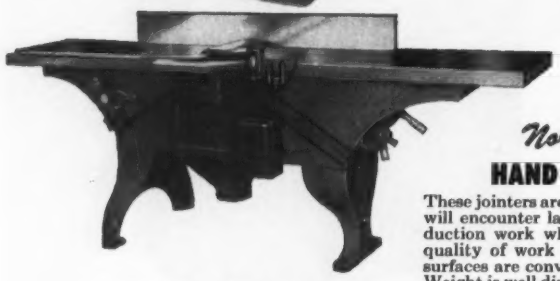

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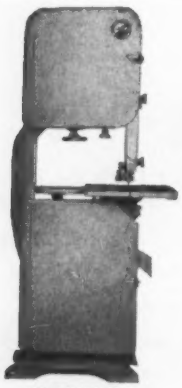

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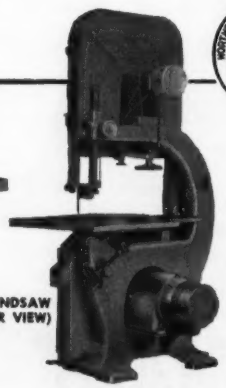

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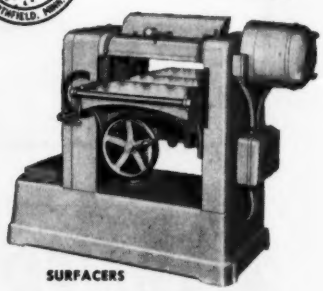

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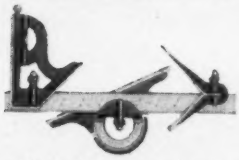

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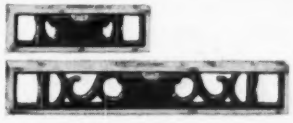

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Quality control and product development get a going over regularly at POST. Here Bob Jones, Manager Educational Sales Division, Hank Krull, Central Division Sales Manager, and Joe Gaines, Director of Manufacturing, examine items taken at random from open stock shelves.

Quality is not a "sometimes" thing...

At POST, quality is a full-time concern of sales, engineering and production. Product sessions like that shown above are the rule, rather than the exception. The direct result of such sessions can be seen in the latest POST product accomplishments. POST scales have divisions die-engraved into the face of the scale—not surface printed as with ordinary scales. A bonding force 10 times that of ordinary T-squares provides long life and assures accuracy of the new POST LOCK-TITE T-Squares. For up-to-date information on the complete line of POST's *professional* quality products, write Bob Jones, Manager Educational Sales Division, Frederick Post Company, 3646 North Avondale Avenue, Chicago 18, Illinois.

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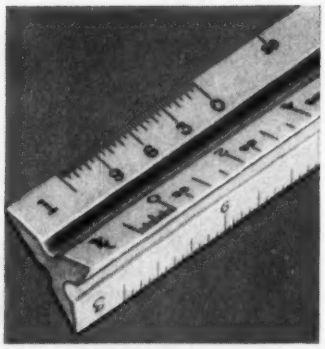

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Not publicity, but "something else"

What Is Good Public Relations?

By Roy K. Wilson

Director, Division of Press and Radio Relations,
National Education Association, Washington, D.C.

WOULD you care to discuss the merits and demerits of using McGuffey readers in classrooms today?

Certainly not. And with the same disdain for things outmoded and high regard for education in the 1960's and beyond, I am not going to discuss the merits and demerits of "school publicity." Publicity is still with the American school system of today, just as is the standard textbook; but publicity, just as a text, is only a minor part of the total effort of schools to be understood and to educate the public.

Publicity announces a parents' meeting on curriculum. We use something else to explain the curriculum.

Publicity invites citizens to the dedication of a new school building. We use something else to bring parents and others into a sharing of the educational activities within the new building.

That "something else" is one of the most important and growing phases of our educational system – public relations. It has many definitions, invokes many images, sometimes is referred to as "personal" rather than "public" relations; but, above all, it is a relationship. No teacher, no school administrator can avoid having relations with the public—whether it be a parent, taxpayer, businessman, school-board member, or next-door neighbor who looks to the teacher for advice on, and interpretation of, local educational standards.

William Levenson of the Cleveland, Ohio, schools (deputy superintendent) has given a succinct description of public relations:

> There is nothing mysterious or esoteric about public relations. One does not need a Madison Avenue address or a gray flannel suit to be adept at it. In fact, the best practitioners of public relations operate at the personal level—they simply like people and have the knack of making evident their desire to be of service. Note please, that we are not talking about mere publicity or propaganda. Public relations is much more than that. It includes the sum total of all your personal relations. The teacher who does his job well is at the same time achieving the finest kind of public relations.

Defining the Public

Why is it that most citizens fail to realize, without being told, that they have a destiny in the future of their educational system?

Why is it that school systems and laymen's groups supporting those school systems spend large sums of money and big blocks of time each year to reach the public?

Why do we now have several hundred special public-relations personnel working full or part time for schools (a number, incidentally, that has more than doubled within ten years)?

The answers to these questions lie in the unique situation of American life today. True, education always has been given a traditional place of honor and importance in this country. Gordon McCloskey, writing in his book, *Education and Public Understanding*, published last year by Harper Brothers, says pointedly: " . . . our people have an almost blind faith in education . . . our school system represents a long-term outgrowth of people's abiding desire to improve their lives and the lives of their children."

Into this pattern of concern for education, however, have come distractions that schools find difficult to overcome. Competing for attention from the public are national and international affairs that also have raised our tax burdens (while school enrolments doubled). More and more items once considered luxuries are being sold as necessities, representing greater competition for the tax dollar and the time of our citizens. The great mobility of the population that began 20 years ago daily uproots strong foundations for local schools that are never replaced. America on the move often never becomes interested in local affairs.

Into this picture spins the Space Age, to make it even more complex. While citizens find it more difficult to pay for education and are less inclined to participate at the local level, they demand greater efforts by schools than ever before. It is a dilemma for all school people.

To harness this great desire for improvement and for the best possible education *to* the realities of the needs and potentialities of our schools is the challenge facing teachers and administrators. The best tool available is public relations.

A school system which converts the most unanimous "blind faith" of people into a true understanding and appreciation of local schools will know no bounds in achievement. The public has the right, and also the responsibility, to make informed decisions about the kinds of schools it wants. It also has the right to have the facts that create an informed attitude and that, in the long run, will bring forth the support, confidence, and goodwill that nourish education.

Unethical Neglect

Dr. McCloskey has included in the book mentioned above a viewpoint concerning ethical action versus unethical neglect with which I agree heartily. Educators, he asserts, should unequivocally reject all proposals for the adoption of practices designed to trick people into thoughtless educational decisions they neither understand nor approve. Such unethical practices do much harm. Educators should have as their aim the development of the largest possible amount of genuine understanding.

If education is important, as those of us engaged in it earnestly believe, then we are obligated to learn how to use all honest means of leading people

to understand it and to support it adequately. To fail here is a violation of ethics and a shirking of professional responsibility. In 1960, when adequate education is of paramount importance to each individual and to the nation, honest and effective communication with the public is an obligation of educational leaders that must not be laid aside.

Defining the Relations

Enrolling the public in school affairs begins with every classroom teacher, every principal, and supervisor. They form the public-relations army that every school system possesses.

An industrial-arts teacher, for example, makes 100 to perhaps 150 contacts each day that are basic to a school's public-relations program. These are the students who take home the most important impressions that the public receives on education.

Nine years ago the National School Public Relations Association published a small booklet entitled *It Starts in the Classroom.* And nothing could be more true. Since that time NSPRA has been gathering enough material on public relations to produce a monthly newsletter continuously for eight years and two more editions of the booklet.

So many ideas on public relations fit into classroom learning that looking at them may cause a teacher to comment, "Why, this is just good teaching!" And that teacher would be right, because developing an understanding in pupils and parents of what is being taught and why, showing the relationship of the classroom to the home, community, and world – these are part and parcel of good teaching and good public relations.

Industrial and vocational education particularly adapt to public relations because these students are being trained for almost immediate contacts with and contributions to their communities. Many of them have these important contacts with the public while they are in school, working and training at the same time. Their enthusiasm and gradually improving abilities prove to parents and the community that shop experience is useful – and that is good public relations.

Readers will immediately recall a classroom project that had public-relations by-products – the projects made in a school shop that were needed by and/or pleased parents; service projects chosen by students to give them experience and at the same time an opportunity to contribute to a worthy community cause.

> **"If education is important, as those of us engaged in it earnestly believe, then we are obligated to learn how to use all honest means of leading people to understand it and to support it adequately. To fail here is a violation of ethics and a shirking of professional responsibility. In 1960, when adequate education is of paramount importance to each individual and to the nation, honest and effective communication with the public is an obligation of educational leaders that must not be laid aside."**—*Roy K. Wilson.*

A few ideas from NSPRA files: One shop teacher invited fathers of his students into the school one night a week for "do-it-yourself" work together. They learned as much about local education as they did about woodworking. Another teacher arranged a program where local businessmen and industrialists viewed the films that were used in class work. In a small Midwestern town, vocational students completely took over the operation of a general store for one day, writing the display ads, arranging window displays, clerking, and managing all store activities.

A wise shop teacher, just as any good classroom teacher, will survey the resources of a community and use them. Citizens engaged in industrial activity provide excellent sources for career counseling to students, for field trips, and as sounding boards on the local usefulness of the curriculum. Citizens who are drawn into school life and who are working *with* schools, invariably are working *for* schools.

Public-Relations Rules

Over the years the National School Public Relations Association has researched the public-relations techniques of thousands of teachers throughout the country and found a few simple similarities. As mentioned before, they could be applied to good teaching as well as good public relations. Do you recognize them?

• *Be Interested.* – Interest, the key to learning, also is the key to good personal public relations. Mere tolerance of your students, their parents, the schools administration, the community, will not inspire you to do the things that inspire the public. If you have an interest in teaching and in people generally, you will discover as much about your students as possible, want parents to participate in school life, explore community resources and use them.

• *Be Available.* – Closely akin to interest is availability. The P-R-conscious teacher always keeps appointments (and on time), makes special efforts to meet the public at programs, exhibits, finds time to help students, and counsel parents outside of school hours. There is nothing more disappointing to the public than to want to see a teacher who isn't there.

• *Be Positive.* – The teacher who mutters, "I'm just a teacher," is doing an injustice to his profession. Develop a curriculum that you are proud of and be confident that your role in the school curriculum makes a real contribution to the public. A teacher with a positive attitude will want the public to understand what he is doing – and will want to understand the opinions and attitudes of the public.

• *Be Direct.* – The most successful "public relationship" – in fact, the only one that does succeed – is simple and fully understood by all. "Integrated curriculum," "levels of maturation," "progressive teaching" are terms from a language that is foreign to most of the public. Explain in terms that they understand and relate to their lives.

To illustrate, there is an example from our recent political history. Preparing a speech to the nation for President Franklin Roosevelt, one adviser suggested he use the phrase, "We are planning an all-inclusive society." When Roosevelt delivered the speech he had changed it to, "We are planning a society in which nobody is left out."

Make sure that none of your public is "left out" because it cannot understand you.

When presented with the suggestion that they study public-relations techniques, too many teachers frown and think "I didn't know I was supposed to teach and be a public-relations representative at the same time. It is too much."

That is not the case. Public relations in the classroom is not another heavy burden for a teacher to shoulder. Just like every student sitting before him, it is a challenge placed in his hands. ★

Techniques to help you

Tell It to the Public

By Sylvia Ciernick
Editor of Publications,
Dearborn, Michigan, Public Schools

AN EDUCATIONAL program, in order to function effectively, can never be too far ahead of public understanding.

This all too true statement is sufficient reason why every teacher needs to consider interpreting his classroom program to the public as an integral part of his teaching responsibilities.

Assuredly, a busy teacher has no time for publicity for publicity's sake. But there must always be time to capture the eyes and ears of the community to help them understand what a program or specific course is doing for boys and girls.

Fortunately, newspapers, magazines, and radio and television stations do not expect teachers to be professional journalists. They do, however, expect teachers to know something about their respective medium – just as a teacher expects the editor or reporter to be versed on the over-all aspects of education.

Working with the various communication media does not require special courses, actual experience as a reporter, or ability to write (though the last assuredly helps).

It does require a little bit of time studying the local newspapers, the television or radio program on which you want space or time, or the magazine for which you want to write an article.

Nothing irritates the commentator of an interview program in television more than the person who calls to say, "I have a brilliant idea for your program. By the way, I don't get to watch it. What time do you broadcast?" This actually happens.

Magazine editors every day receive manuscripts which are dead giveaways that the author never took the time to analyze the publication for its editorial policy or for such simple but important items as the average length of articles or writing style.

Newspaper editors daily pull their hair because someone submits a four-page typewritten story which is much too long for practical newspaper use and then pins on a note, "Please print all of it or nothing."

Getting to know the various media in which you hope to gain space takes top priority. It is also an excellent way to develop the nose for news which is the key to any successful publicity program.

Read your newspaper or magazine, watch specific television shows, and listen to radio programs that use local material and have guest performers. Analyze why certain items are considered newsworthy. Study how the information is presented. Look at the length of the articles. Recognize the form used in identifying people. This procedure is like a short course in journalism which is available to anyone who takes the time to analyze the finished product and then watches his own class activities for the same essential news elements.

How to Work with Newspapers

There are two kinds of news stories:

1. A straight news item, such as an event that is news today but history tomorrow. Usually these stories are facts that lose their newsworthiness if not printed within a specific time.

2. A feature story, such as a classroom project, that is usually timeless and can appear today or a month from today. The human interest, or story-like quality, make these newsworthy rather than the facts alone.

Here is how to handle a straight news item:

You have a news story if . . .

1. A student wins an award for craftsmanship, scholarship, or anything connected with the subject.

2. The industrial-arts department plans a program or event, such as a special open house, demonstration for business leaders, etc.

3. New equipment that will help students learn more and better is purchased or received as a gift.

4. Students construct something for the local hospital or some other worthwhile cause or civic agency.

5. A record number of boys are placed on the cooperative work-training program.

These are only a few ideas. Try to think of other activities that make good stories.

The following questions will help. Is the idea timely? Unusual? Significant? Will it have a direct or indirect bearing on the readers' personal concerns, such as job, pocketbook, family welfare?

All of the typical news stories above have a time element. This means that stories on programs and events should be printed in the newspapers before they occur. The other stories should be covered on the spot and published as they occur or immediately afterwards. Watching these datelines can make the difference between breaking into print or filling the editor's wastebasket.

Local weekly newspaper editors are usually understaffed and appreciate receiving as complete information as possible in typewritten form. If a newspaper style of writing is one of your accomplishments, editors are usually grateful. However, they are also very pleased to get the facts, all the facts, plus interesting details in outline or note form.

The five "W's," "who," "what," "when," "why," "where," and sometimes "how" are still a good guide in writing or outlining a story. It is no longer necessary, however, to get them all into the first sentence. Just be sure they are somewhere in the story.

Depending on the story, some of the W's are more important than the others. Special thought should be given to the "why" and "how" because this is usually where the explanation of the educational process can be made.

As an illustration of the outline technique, the editor was able to write the story on toy trains (see illustration on next page) from the

Toy Trains Are Fun!

One is never too old to play with toy trains. Al Hackett, a pupil at Lowrey School, thinks it is just as much fun to play with those trains as make them. Al is one of the 20 boys in Mr. Richard Litrell's 8B woodshop class at Lowrey that made 200 of the 15-inch trains for distribution to underprivileged children during the holidays.

AT LOWREY SCHOOL

Use Mass Production to Make Toy Trains

Mass production techniques were employed along with a large dose of Christmas spirit at Lowrey School to turn out 200 toy trains for underprivileged children.

The 15-inch long five-car trains were made by the 8B boys in Richard Litrell's woodshop class in time for Christmas stockings.

Before the last wheel was assembled, each boy had learned 75 different operations, including sanding, boring, cutting and painting.

* * *

MR. LITRELL used the project to illustrate the mass production techniques used by American industry. Sub-assembly and final assembly lines were set up to departmentalize the 75 different operations involved.

Time was also taken to study inspection techniques, quality control, time and motion studies, and production costs.

The tiny one-inch high trains consist of 68 parts and cost only 10 cents. Each set includes an engine, tender, tank car, coal car, and caboose.

The shop teacher supplied factual material in outline form for this story which was school written for the community newspaper.

following outline prepared by the teacher:

CHRISTMAS TOY PROJECT

Purpose: It is the purpose of this project to acquaint industrial-arts students with mass-production techniques similar to those used by American industry.

Procedure: Each student has an opportunity to do each of the major operations which include design, layout, power-and hand-cutting operations, sanding, drilling, painting, and boring. Subassembly and final assembly lines were set up. Students also studied the mass-production techniques of inspection, quality control, time-and-motion study, and production costs.

Train Statistics: Each train consists of engine, tender, coal car, tank car, and caboose.

Over-all dimensions—1.5" x 15".
Number of operations involved—75.
Total number of parts (each train)—68.
Cost (each train)—10 cents.
Production goal—200 complete trains.
Class time involved—Approximately four school weeks.

Class Statistics:

School—Lowrey Junior High School.
Class—Wood shop.
Grade level—8B.
Number of students—20.
Instructor—Richard V. Littrell.

Distribution: These trains are to be given to local charitable institutions.

Here is how to handle a feature story:

Fortunately, industrial arts offers a wealth of feature-type stories and picture possibilities because so often a tangible product is involved that can attract the readers' interest.

You have a feature story without a specific deadline if—

1. You have a human-interest or unique angle to a classroom project. For instance, the boys in auto shop take a wrecked car and rebuild it, sell it, etc.

2. A teaching innovation is being tried out. This may involve new techniques, new equipment, etc.

3. Students are doing a project that lends itself particularly well to being photographed.

4. A boy makes something that is usually quite costly completely out of scrap materials.

5. You contrast the changes in auto shop or electrical shop teaching over the past 10 or 15 years to show the effect of technology on the school program. How much more boys must learn today, etc.

Feature ideas are usually a good vehicle for getting the curriculum story across. Once the unique angle is used to gain reader interest it is often possible to include one or two sentences that present a little bit of educational philosophy in a simple form. (Note the marked paragraph in the toy train story.)

Because features require more skill in writing, these stories are usually best described verbally to the editor and, if possible, viewed by the editor in the classroom.

Take advantage of the picture possibilities most industrial-arts classes offer. Often a picture of completed or almost completed projects with a good caption is as effective as a lengthy story. (See illustration at top.)

The cooperative work-training story (see illustration on next page) is an excellent example of a combination story and picture and the timeless element that appeals to editors who like one or two stories they can hold for a slow week.

General Hints:

1. Get to know the editor of your weekly paper, or the reporter assigned the school beat if you have a daily newspaper.

Weekly editors want to know as many persons as possible but not on their press day. Most weeklies print on Thursday, so Friday or Monday are the best days to visit.

2. Editors are always looking for story ideas but want to reserve the complete right to use or reject a story. Approach the idea of suggesting stories on a batting average basis. If 80 percent of your story ideas are used, you're batting like Babe Ruth.

3. Type all stories or story outlines on one side of the paper and double space. Avoid handwriting. If you must write by hand, be sure to carefully print all names. Put your complete name, phone, and date in the left-hand corner. Make it easy for the editor to reach you if he has a question.

4. Give first and last names of all persons. Check and double check spelling.

5. A short story, one page or less, has the best chance of being used.

6. If you have an idea that involves considerable preparation time, first check to see if the editor is interested in it.

7. Find a reason, at least once a year, to have the editor or reporter visit your industrial-education department. Maybe invite him to have lunch in the cafeteria and to see the woodworking project just completed by the eighth-grade boys. Once he is in the building, show him several different classes in operation. He may recognize story ideas you never considered. Because most editors are men, they will enjoy their visit and feel comfortable around tools and machinery.

8. Newspapers are usually more

Sample of a relatively simple kind of publicity release that often gets published.

20 Thursday, Oct. 29, 1959 The Dearborn Independent

Co-op Program in Schools

★ ★ ★ ★ ★ ★

The idea of work experience is as old as the pyramids.

• • •

STUDENTS at Dearborn public schools are afforded an opportunity of receiving valuable on the job training while attending regular classes under the Cooperative Training program arranged by school officials.

The school day of the student enrolled in this program is divisioned so as to offer a half day to the particular field of interest fostered by the student.

At the conclusion of the first month of school 210 students were engaged in cooperative occupation training with a maximum of 500 students expected.

Each student receives school credit for satisfactory work experience. He works a minimum of 20 hours or a maximum of 48 hours per week. Usually the student hired receives pay on an hourly basis.

• • •

IT TAKES the cooperation of the student, the school and the employer for this program to function.

The employer has the responsibility to employ the student a minimum amount of time each week in the trade or skill which gives the student the opportunity to learn as well as work.

Any business, professional, or industrial establishment which hires a boy or girl on a part-time basis assists in making the student a more efficient and effective citizen.

The school plays the intermediary part of providing coordinators and acting as the laison officer between the employer, student, school officials and the State Department of Public Instruction.

There are six coordinators in the school system. They consult with students to determine their interests and begin the task of placement in jobs.

• • •

IN ADDITION to the on the job training part of the school schedule maintained by each student enrolled in the cooperative program, the student is required to attend basic classes of English mathematics, science and social studies

"The purpose of this program is to provide the school youth with the basic competences in occupation which fit interests," said Vard Martin, Director of Vocational Education and Practical Arts.

Mrs Mary Haight and Stephen Vanek are the program's counselors at Dearborn High school where 77 students are enrolled in the program. At Fordson High Harvey Smith and Wade Smith have 70 students while Cecil Arnold has 46 students at Lowrey and Richard Feusse has 17 at Edsel Ford.

At each school the program is divided into a business and retailing section and the trades and industry section.

Where two counselor's are employed the distinction between the two categories is made.

This is the 10th year that the program is in effect in Dearborn. Employers are given the opportunity to contact the school at any time for information on student placement.

Cooperative training such as outlined here benefits business, benefits the community, the school and the student.

IN A RECENT survey these statements were made by employers of students in Dearborn:

"Working on a cooperative training basis gives the student worker broader understanding of the business world and a basis for full-time employment or for continued education. It provides the employer with a good source of trained future full-time employees.

"The employer doesn't have the entire responsibility of training the employees who are on this program, the school helps with the training."

From the student side of the subject the following remarks were recorded:

"It made me like school better. It gave me training which I needed It helped me decide what kind of occupation I want when I got out of school."

AUTO SHOP . . . instruction prepares boys at Fordson High school with basic needs which fit their interest and occupation. Students from left are Robert Begg and Frank Kopcik with teacher Glenn Backstanz.

ON THE JOB . . . is Frank Kopcik who is enrolled at Fordson High in Dearborn School System's Cooperative Training Program which affords youngsters work experince while learning. He is employed at the school's bus garage and is receiving instruction from William Brooke.

Editors like stories like this which can be held for use when breaking news is scarce.

interested in stories with names than without names. This is particularly true of weekly papers.

How to Get Radio and TV Time

You probably will have usable material for radio and television less frequently than for the newspapers. But this does not mean to ignore them or to consider them too difficult to approach.

Both radio and television stations have news desks similar to a daily newspaper's. If you want to publicize an event coming up, send them a news release when you mail the newspaper's release. They will consider using it on their newscasts or local events programs.

If your idea is more appropriate for a special-events type program, present it to the program manager or the producer of a specific show that you feel would be interested.

The most likely daytime program for using school stories are interview and demonstration types. Interview-type program producers are always looking for someone to interview. If you have a nationally known person speaking at the annual industrial-arts banquet, offer to have him available for a "taped" or "live" interview while he is in town.

Demonstration-type programs may appreciate a five-minute television preview of the student-made items being sent to the Industrial Arts Awards competition.

Remember, it is much easier to get five minutes on an established program than to get a completely new show planned around your idea.

General Hints:

1. Don't get caught telling the radio or television program manager that you know he must allot a certain amount of time to public-service broadcasting. He is looking for good story ideas, not filler materials for public-service time.

2. Radio and TV programs can take a considerable amount of time and know-how. Do not push for your own complete show unless you are sure you can follow through.

3. Go to the station with a specific idea that you are sure fits the programming format and over-all policies of the station.

Writing for Magazines

Magazine article writing usually falls into two categories: (1) articles for professional education magazines (such as SCHOOL SHOP) read by educators, and (2) articles for general circulation magazines that present information on education for the lay reader.

Education magazines are always looking for good articles written by teachers. Often they are more interested in the idea presented than a particular style of writing. They emphasize clarity of thought, uniqueness of idea, and value to the reader more than clever prose. For this reason teachers should consider writing for professional journals if they feel they have something to share with others. Specific teaching techniques are among the most popular kinds of stories.

General circulation magazines are also more interested in the idea than the writing style. The interest extends to the point that many prefer to receive a detailed outline of the idea to which they then can assign a staff writer. For this reason it is always best to query the magazine by submitting an outline of the idea rather than a completed story.

In Summary

Newspapers, radio, television, and magazines are showing an increasing interest in education. Less time is needed to convince them that education is big news. The time can now be spent in presenting education in its most interesting, thought-provoking, and explanatory manner possible for reader and viewer consumption.

The audience is waiting and the media are available so it is up to the teacher to present the information as part of his role as interpreter of the educational program. Remember — education cannot function effectively if it is too far ahead of public understanding. ★

Shop Students Speak Their Piece

A National Survey of Student Reaction to Industrial Education

An Explanation

STUDENTS are consumers of industrial education. We at SCHOOL SHOP think that it is important to know how they feel, for example, about the things they are learning, why they are taking industrial-education courses, what their parents think about it, so that we can share these impressions with our readers who can take from them the clues which might lead to more effective public relations. Hence this survey was made.

This was not intended to be a scientific survey. What we were after was a general idea of how students and their families feel about industrial education. We all have our own ideas of what students think, but what we wanted was some evidence to confirm or deny our suspicions. We felt, moreover, that many of you would be interested in learning the same things.

Members of the Editorial Advisory Board of SCHOOL SHOP were enlisted as reporters. They gathered the raw information from schools across the land. Although we make no pretense at being scientific in the survey report, we most certainly do take pride in the manner in which our reporters covered the country, furnishing us, once the leg work was done, with more than 200 first-hand interview reports from students taking industrial-education courses.

Reporters on this assignment were:

Walter M. Arnold, U. S. Office of Education, Washington, D. C.

Russell K. Britton, Denver, Colorado, Public Schools

J. Lyman Goldsmith, Los Angeles, California, Public Schools

Albert E. Jochen, New Jersey State Department of Education, Trenton

E. L. Kurth, Florida State Department of Education, Tallahassee

William R. Mason, Cleveland, Ohio, Public Schools

Emmett O'Brien, Connecticut State Department of Education, Hartford

John P. Walsh, U. S. Office of Education, Washington, D. C.

THE questionnaires used in making this survey contained half a dozen items which were intended to bring out student viewpoints on industrial education and to identify the student's grade level and industrial-education course. They were not signed.

Following is a general summary of the results.

What Are the Influential Factors?

The first question was: *How did you happen to take an industrial-education course (s)?*

Friends and relatives, guidance counselors, and "chance" were undoubtedly the most important influencing factors in directing students toward shop courses, with friends being the most important by a substantial margin.

In families where the father, brothers, cousins, and uncles were successful in trades, influences from these same relatives were strong in deciding the future of the lad in question. A ninth-grader in Connecticut, for example, said:

"I happened to take a trade course because my father is a tradesman and I am very interested in it. I learned about the trade course from my father."

Another student from the same school went back two generations when he attributed his decision to ". . . grandfather, who is a machinist."

A vocational student said he wanted to be a carpenter because: "It's a family tredition." (Spelling his.)

Guidance counselors, school handbooks, open houses, and career days were all mentioned as reasons for youngsters taking industrial education. Seventh- and eighth-grade industrial-arts courses were not without their credits. A young man from Cleveland said:

"I enjoyed industrial arts in elementary school and was advised to continue."

An eleventh-grader from California said:

"I became interested in electronics through my junior-high-school industrial-arts teacher."

In some instances youngsters had come to the realization that college was out of the question for them. They decided early in their secondary-school careers that learning a trade made the most sense. These were few, though.

Equally few were those students who knew, and said so, that they were going to college and that they were in industrial education because: (1) they felt it gave some precollege preparation for their vocational objective (a student who wanted to become an engineer taking a second year of drafting, for example); (2) they enjoyed doing the things called for in shop, regardless of whether it was doing them any good vocationally.

There were more than enough of the following kinds of answers to prove that certain intraschool public-relations practices are worth continuing and even augmenting. One lad, for example, said he was in industrial education because:

"I was invited to come to the school and take a tour of it. My parents and I were very impressed with the school and the facilities that the school has. We thought I would be better off going to this school (in New Jersey) and having a trade when I leave."

He later also said:

"I think that when I go out for a job I will know a lot more than a graduate of a regular public high school."

An electronics student from the same school said:

"I was a 'ham' operator before this course and friends steered me to this school."

Ah, those friends! They kept cropping up in interviews from Florida to Colorado.

There were a few hardy souls, such as the lad from a school near Washington, D. C., who gave credit to nobody and nothing. He said it was "selfdiscovery."

Some students – you will recognize them immediately by samples of their responses – didn't hold friends, rela-

tives, guidance counselors, or Lady Luck responsible for their predicament. They knew exactly where to place the blame.

"They put me in here." ("They" not explained.)

"The office put me in here." (A slightly more accurate response.)

"Because it was an easy credit." (A popular answer, especially from some girls.)

"Got kicked out of the Spanish class." (The most forthright – and possibly most accurate – answer of all.)

This type of answer, and there were many of them, supports the notion that industrial-education courses are convenient places to store certain students until their ages and the law agree it is time to set the lads loose to find something to do for the rest of their lives.

Two young men, both incidentally in vocational machine-shop programs in a comprehensive high school in the East, chose their programs because the school was close to their homes. One fellow got his first bit of information "from some kid," but the other chap dug it up from elsewhere and decided on his particular school because of its proximity to home. He answered his question somewhat remorsefully (spelling and grammar his):

"Actually I took the course because it was close to my home. But now that I'm in it I see what a stupid choice I made. This course has nothing to offer to any boy or girl when they get out of school. Their should be more math and Algebra given, better English given and a better all around education given. I will try to discourage anyone who wants in the voc. course unless there are changes made."

The same lad, who had some knowledge of his failings, admitted later in his questionnaire:

"I'll admit I learn a lot in three years of my vocational training in shop, but as for helping me when I get out of school I have my doubts because you need more than just shop training but a good Algebratical and mathematical education."

He said, too, his parents "are more interested in all my school activities and not just shop."

Are Students Learning?

A two-part question this study asked of students, to reveal to some extent their inner thoughts about industrial education, was: *Do you think the work you are doing in the shop is helping you to learn about things that are worthwhile for you to know? Will these things help you when you have a job after leaving school?*

A good many of the young men in machine shops, carpentry, graphic arts, etc., were not at all certain they were learning the right things in school; even less certain about their worth once "on the job." There were, on the other hand, students who were so sure of the eternal value of things learned in school that it would not be surprising if they thought we were approaching the millenium.

Students in mechanical drawing and electronics seemed to be the most confident of permanent benefits accrued from industrial education. One of the responses by boys who felt this way was:

"The things we are learning in machine drafting shop are all important. They could be applied to almost any trade." (A junior in a New Jersey school who wants to become a draftsman.)

On the other hand, there is a ninth-grader in a Connecticut school who, when asked what he wanted to do for a living, said:

"I'm not sure yet but till now I would like a job operating machines or I might like to be a state trooper because I think it's a good job and I'll be out sick a lot."

He also feels:

"The work that I have done so far is not going to do me any harm and it helps me to learn how to use the machines and tools better." (The state trooper got lost in the meantime.)

All in all, there seems to be a generally good feeling about the worth of time spent in industrial education. The feeling is that the time is well spent; or, at the worst, not wasted. However, there is a subtle feeling about learning and its application later in life "on the job." There seems to be a little hesitancy, a tendency toward insecurity. This feeling seemed to predominate with those students who were not really sure about their vocational objectives.

On the other hand, students who knew what they were going to do, and did not hesitate to say so, felt that not only was time spent in industrial education well worth it, but its application in later life – "on the job" – would be most helpful.

A third question we asked these students was: *Are your parents interested in what you do in the shop?*

What About Parents?

As could almost be predicted, there were a lot of "yes" answers to this question; so many in fact, that we suspect the respondents wanted to think that their parents were interested whether they were or not. The best we can come up with is that, for the most part, shop students' parents are as interested in their children's progress in school as are other parents.

Some of the answers we received to that question were:

"Yes. My Mom does not know much about cars but my Dad says I have learned a lot and he hopes I learn more than he knows." (The Dad is a mechanic.)

"Yes. They want me to get every possible chance to learn."

"Yes. My parents are interested in anything I do."

"Sure."

"Yes."

"They don't know I have it." (Meaning the shop course.)

"My parents, especially my Father, are pleased and interested. He brings me literature about drafting from where he works. My parents visit the shop whenever there is 'open house'." (A junior in drafting from a New Jersey school.)

"My parents are very interested in what I do in shop. . . . My Father always gives me his car when there is something wrong and has always been completely satisfied." (The lad means – we think – that he has successfully repaired his Dad's car.)

On the other hand there are some parents, judging from their children's appraisal of their interest, who we suspect do not quite realize they even have children – let alone children in school taking industrial-education courses.

Is It All Worthwhile?

The last question we asked was: *Do you think what you do in the shop is worth the time spent on it?*

It can be heartening to receive answers like the one below to the question above:

"The school has given me a wonderful opportunity and I have no regrets. Everything I am getting is worthwhile." (From a twelfth-grade vocational machine-shop student in New Jersey.)

Answers like the above also make

(*Continued on page* 112)

Telling the industrial-education story to students

I Read You Loud and Clear!

By Glenn D. Warrick
Supervisor of Industrial-Arts Education,
Long Beach, California, Unified School District

WHAT is more fascinating, more intriguing, and more challenging than industry with its unlimited potential and, as yet, only partially explored horizons?

Where in your school's program does industry become a part of the general education of youth? In a program of industrial arts, of course, for basically industrial-arts education is a study of industry. This is the reason for the existence of a program of industrial-arts education. You, as a teacher, supervisor, or administrator, are a representative of one of the best professional products in today's school curriculum. What are you doing about it?

Before you answer this question, let's take a look at this curriculum area and establish certain basic understandings. Notice that I call industrial arts a curriculum area – for it is just that. It's more than a course; an industrial-arts program involves teaching a series of courses and the content of each is related to industry.

To set the stage one might ask these questions: What is industrial-arts education? How did it emerge as an area of instruction on the elementary- and secondary-school level? What is the basis for including industrial arts in a program of general education?

Areas of Ignorance

To begin with, fundamentally industrial arts is a study of industry and involves participation in typical industrial experiences. From one vantage point twentieth-century America is dominated by industry. In some instances youth have elementary understandings of some aspects of industry. In other instances, youth may be totally unaware of significant aspects of industry and the ways industry provides for our daily material needs.

This lack of information, of understanding, of perception on the part of youth, creates a void in the general educational development of youth. It is caused for the most part by the changes that have taken place in our culture, that is, the movement of industry from the home and village shops of a rural community to industrialized urban centers. This void, or educational challenge, has been accepted by an area of our curriculum which gives youth experiences in exploring and perceiving our society as one which is industrial and democratic in nature. This area of our school's program is termed industrial arts.

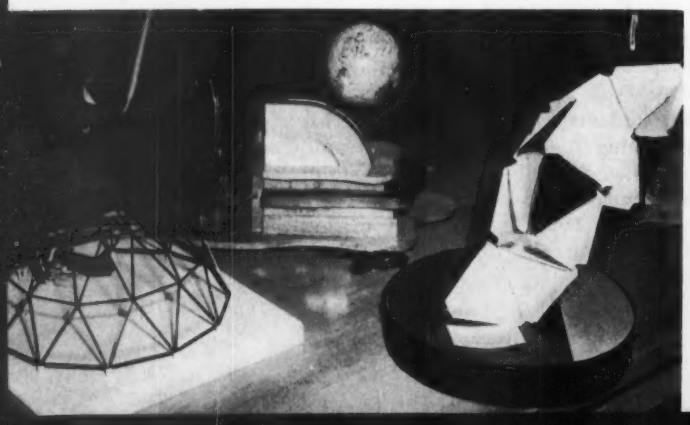
Industrial arts is a part of general education precisely because the "subject matter" of industrial arts – industry – is basic to our way of life. No one can expect to be thought of as an informed person if he is not aware of the dominant element of our culture. The contribution of general education in this or any instance is to make it possible for youth to understand and to exercise better control over their environment, their culture, their life.

Now then, can you convince students of this? You have a package within which are some of the most important objectives of your professional career: to provide youth with sufficient insights into the many and diverse aspects of industry so that they will better understand a basic element of our society – industry.

Ways and Means

Let's look at some of the ways this package – industrial arts – can be made to attract students. Take a movable display case, for example, which was made in one of our schools. This unit has been designed so that it can be moved to the school library, cafeteria, auditorium foyer, gymnasium entrance, or the main office and reception area of a school. The display case was designed specifically with a job in mind and it does that job well. It reaches out beyond the

IR and D Club (industrial research and development) projects that involve problem solving and intrigue the better students who are research minded. Clubs such as this are effective interest arousers.



This display of industrial-arts work by a school district contained over 1200 projects. Several thousand adults viewed this exposition, which turned out to be a very potent public-relations procedure.

INDUSTRIAL ARTS
KIWANIS CLUB
LONG BEACH
AWARD
THIS
HAS BEEN SELECTED FROM HIS CLASS AS THE OUTSTANDING
INDUSTRIAL ARTS STUDENT IN THE AREA OF—
THIS CERTIFICATE
ON THIS DAY OF 19
PRINCIPAL
TEACHER

Community service clubs often will sponsor awards for outstanding industrial-arts work.

school shop to other areas of activity in the school. It can be a super salesman for you and carry a message to students and faculty outside the industrial-arts department. Have you tried reaching students who are not currently enrolled in the industrial-arts program at your school in a similar way?

Another means of communicating with youth on your campus is the school newspaper. This is one of the school's best public-relations vehicles. Don't rationalize now by saying, "Well they never print anything about my program in that paper." Look at your program! Is it worth talking about? It should be. If it is not a credit to industrial-arts education, make it one. The best programs of industrial-arts education are not necessarily confined to the well equipped and supplied school shops. It's the teacher who makes the difference. It's your responsibility to develop a program, in keeping with industrial-arts goals, in which youth will recognize real values. If this is done, students, faculty, and parents will be interested in knowing about the industrial-arts program and its activities at your school.

Student Clubs

How active are industrial-arts clubs on your school campus — or do you have any? When students become enthused about a program, a course, a club, or an activity, the word spreads rapidly throughout the school. Give your club a purpose and make it meaningful to youngsters and it will be an industrial-arts program booster for you.

Try the Club of the Month plan which originated at Inglewood High School, Inglewood, California. This industrial-arts club has student recognition as its goal. One student is selected monthly from each industrial-arts class. The criterions used in the selection of candidates for the Club of the Month award vary from month to month, e.g., one month they may be based on cooperation, another month on accuracy, another month on improvement, and so forth. Another idea along this line is the IR and D Club where students undertake some meaningful group activity related to industrial research and development. Club activities in this area might be slanted principally toward the student who is research and experimentally minded. See the photograph for a few ideas related more closely to problem solving than to project construction, per se.

Late afternoon and Saturday field trips add zest to your club activities if the sponsor feels this enthusiasm himself. Take your club members to an industry that will really open their eyes when they glimpse some of the new developments. Give your club status by having some important people speak to your group or make arrangements whereby selected students can spend a day in industry with a craftsman, technician, or supervisor on his job. Most of your administrators and fellow townspeople will be happy to do this if the importance of the occasion is explained and prudence is used in making the request.

Father and Son Program

Some schools like the father-son idea of having boys and their dads work together on some kind of purposeful activity. A program of this type encourages youngsters, many of whom are not enrolled in industrial-arts classes, to join with their dads in varied construction activities. Insights gained in this manner encourage enrolments in school-day classes among youthful participants and their friends. One school about which the writer has knowledge has had an evening father-son woodworking class for 14 years. Father-son activities in other schools involve field trips, good educational movies, demonstrations, and speakers. One group concludes its father-son activities in the spring with a barbecue using braziers made in the school's metal program.

Another way of developing student interest in industrial-arts activities is to provide an opportunity for all pupils in the sixth grade of schools in your community, if you are on a 6-3-3 plan, to tour the junior-high school that they will be attending the succeeding year and observe the kinds of learnings that take place as classes are being taught in the industrial-arts program. Eighth-grade students on an 8-4 basis might follow a similar plan and tour the senior-high school that they will be attending the succeeding year.

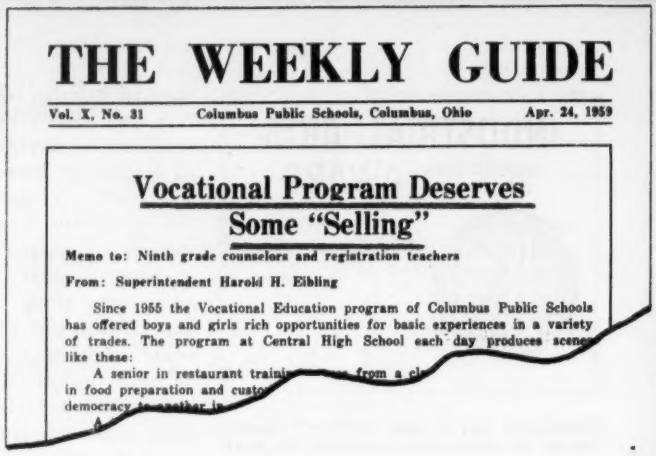
County fairs offer another example of an opportunity that exists for students and teachers in the industrial arts to reach those outside the program. Live exhibits generally create the most interest. This type of a display not only provides a better opportunity for viewers to see actual problem-solving activities in opera-

(*Continued on page* 100)

Students putting on a demonstration at the Los Angeles County Fair last year which was witnessed by thousands of citizens. Students were proud to participate and the public saw actual problem-solving activities going on in a simulated industrial-arts shop setting.

How Columbus goes about

Interpreting the Program to Other Teachers


THE WEEKLY GUIDE

Vol. X, No. 31 Columbus Public Schools, Columbus, Ohio Apr. 24, 1959

Vocational Program Deserves Some "Selling"

Memo to: Ninth grade counselors and registration teachers

From: Superintendent Harold H. Eibling

Since 1955 the Vocational Education program of Columbus Public Schools has offered boys and girls rich opportunities for basic experiences in a variety of trades. The program at Central High School each day produces scenes like these:

A senior in restaurant train... from a cl... in food preparation and custo... democracy to another in...

By Richard O. Knight

Director, Department of Industrial Education, Columbus, Ohio, Public Schools

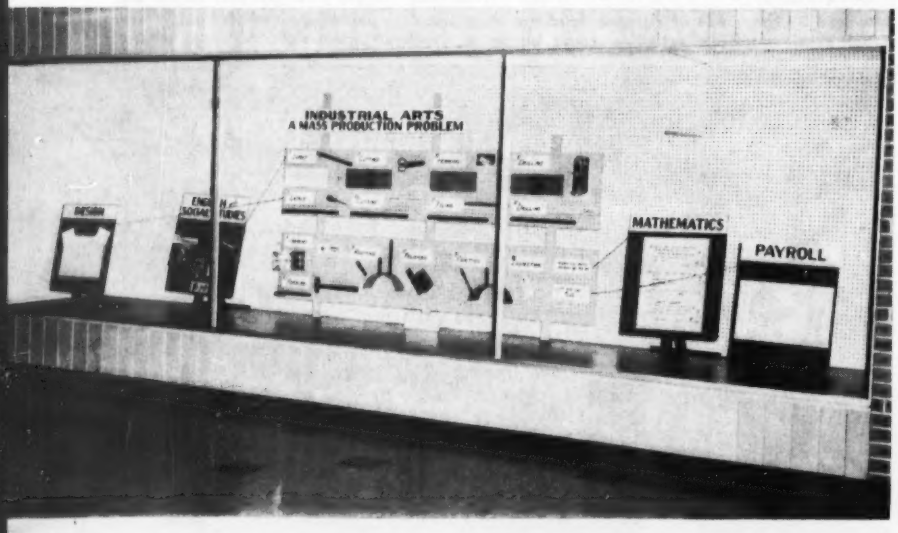
ARE we industrial-education teachers trying to communicate in a vacuum? Do we behave like wallflowers in our relationships with other teachers? Are we unaware that others will become interested in us only if we are interested in them? Or are we sharing our ideas, interests, purposes, methods, and achievements with fellow teachers in other subject areas?

For the total school program to be most effective, each teacher needs to be sensitive to the contribution that his particular subject can make to other areas in the curriculum. Industrial arts is no exception. At the 43rd Annual Industrial Arts Conference, a panel of educators discussing "Unique Contributions of Industrial Arts to Secondary Education" made the following statement regarding school motivation:

> The shop teacher can make one of his greatest educational contributions by motivating interests sufficient to inspire our pupils to greater achievements in other fields as well as our own.

Progressive business and industrial managers know the value of good communication. They know that if information can flow up and down through line organization and back and forth across staff functions with ease, it will improve the quality and quantity of production. The well informed worker is usually more satisfied and more efficient, takes greater pride in the performance of his job, and is more loyal to the firm than the worker who receives only limited and usually distorted information by way of the grapevine. In addition, good communication through sales, service, and advertising improves public relations and increases customer satisfaction.

A main corridor display in a Columbus, Ohio, school telling about a class production project.



We Talk to Ourselves

If we want others to know what we are doing, how we are doing it, and why we are doing it, we must communicate. It has been said that modern man has learned to bridge the widest river, but not the narrowest misunderstanding. Industrial-education teachers tend to be clannish. They enjoy "talking shop" among themselves. They have an insatiable desire to know what their fellow industrial-education teachers are doing. They are keenly interested in comparing shop facilities, projects, course outlines, and organizational and operating practices. This intracommunication has value, but from a public-relations standpoint they are selling to the wrong people.

Industrial-education personnel should welcome the opportunity to be responsible for, or to participate in, PTA programs, to plan and present radio and television broadcasts, to serve on school committees, and to take part in workshops. They should keep the public informed through exhibits, project fairs, community displays, interesting newspaper stories, by appearances before service clubs, and by activities which enable pupils to describe and discuss their work.

Let us consider some ways in which the industrial-education teacher can communicate with other teachers. Certainly the guidance counselor needs to know a great deal about industrial education. The counselor should be especially conversant with the purposes and content of industrial-education courses because of their cooperative and terminal pupil-placement possibilities. The counselor should know the particular interests, aptitudes, and abilities that a pupil should possess to profit educationally in this subject field. The counselor should also know that industrial arts has value for many college-bound

youth, especially those planning to prepare for careers in teaching, art, research, science, or engineering. In a school system having a specialized vocational school, junior- and senior-high-school counselors should be given an opportunity to observe the shop facilities and talk to instructors about courses of study and opportunities available. This personal touch fosters good rapport.

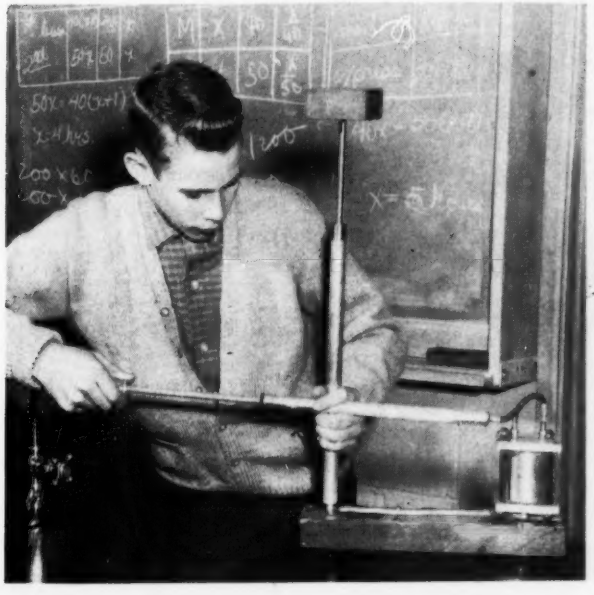
Science students in a Columbus school showing classmates the use of a demonstration slide rule made in the industrial-arts shop by youngsters in school's more-able-learner program.

Recognition Is Flattering

We all know the values that accrue from making the individual feel important through recognition. Teachers of other subject areas will better understand and appreciate industrial education if through the pupil their subject can be recognized and integrated with what is going on within the shop or laboratory.

The activities of one of our junior-high-school, industrial-arts instructors illustrate what has been said above. Prior to introducing a class production project this instructor discusses in a school staff meeting what he plans to do in the shop and suggests ways in which other teachers might help, provided they wish to do so. As a result, when pupils prepare written reports on topics such as the source of raw materials used, manufacturing processes, conservation of natural resources, and other aspects of industrial and occupational information, the English teachers and librarian are most cooperative. The mathematics teacher, as a part of his regular classwork, assigns problems of measurement, production costs including cost of materials, work time, and wage rates based on job evaluation. Social-studies classes are interested in the shop pupils' discussion of occupational classifications, job evaluations, and historical, economic, and social implications of mass production.

A science pupil working with a Van de Graff static generator made in the industrial-arts shop in the more-able-learner program.



A student running a test with a hydraulic lift made in the more-able-learner program.

Other pupils and teachers become acquainted with the project through a comprehensive exhibit set up by the pupils in the corridor display case located near the main entrance. Here products are shown in all stages of fabrication and assembly; tools used are indicated; various processes are illustrated with drawings and photographs and related reports are grouped by subject areas. Teachers and pupils are highly enthusiastic, and this project has become one of the highlights of the school year.

In two of our junior-high schools, special classes for the more able learners are organized. These classes use the shops as a laboratory or research center. Here again, the industrial-education instructors meet with the building principal and teachers of other subject areas to discuss ways of implementing such a program. Classes are limited to 20 ninth-grade boys and girls having an IQ of 125 or better. Motivation leading to the selection of a project is the responsibility of the pupil and the classroom teacher. For the first time, teachers of science, mathematics, and music begin to recognize and appreciate values common to their respective subjects and industrial education as they share with pupils the problems of planning, design, construction, and finishing. Classroom teachers, resource teachers, supervising principals, and administrators who have visited the shops are intrigued and fascinated with the enthusiasm, interest, and ingenuity demonstrated by the pupils.

The School Benefits

Projects constructed include a Van de Graff static generator, hydraulic lift, Wilson cloud chamber, wind tunnel, reflecting telescope, fish-breed-

ing trap, slide rule, musical chimes, and xylophone. On completion, most of the projects are given by the pupils to the school to be used as part of the classroom science equipment.

Each year all teachers new to the system (approximately 500 a year) participate in a conducted tour through the administration building accompanied by their principal. This tour gives them an opportunity to meet the directors of all departments and services. At this time the industrial-education department distributes a small pamphlet which briefly states the purposes of, and opportunties available in, industrial arts and vocational education. This initial contact early in their professional affiliation helps new teachers appreciate the scope of industrial education and the unique contribution it can make to the pupils of our schools.

Each week throughout the year, every teacher receives a copy of an administrative bulletin called *The Weekly Guide*, which emanates from the public-relations office at headquarters. This publication provides an excellent means of keeping all teachers informed and of giving recognition for outstanding work being done by teachers and pupils in all subject areas. Through this publication the unusually fine achievements in industrial education by the individual pupil, instructor, or school can be communicated to every teacher and administrator. *The Weekly Guide* is mailed to the school editor of local newspapers and it is a valuable source for interesting stories which are often published in greater detail. This publication also reaches approximately 60 community leaders every week.

Everybody Gets One

Another valuable public-relations device is the "take-home leaflet," a small six-page, folder-type publication. Leaflets are printed in sufficient quantities so that one can be sent home with the grade cards of all 80,000 pupils each six-week grading period. Leaflets are carefully prepared to communicate to teachers, pupils, and parents information concerning all phases of school operations. The following titles will illustrate the variety of topics covered: "The Foreign Language Program," "Home Economics for Modern Living," "Our Testing Program," "Helping Columbus Boys and Girls Choose Their Life's Work," "Educational Opportunities for Adults," "Learning Opportunities for Adults," "Industrial Education, a Part of General Education."

Exhibits and displays always command attention. They are especially valuable as a tool of communication if they are designed to tell a story. For example, an exhibit which shows the relationship of the design, the pattern, the casting, machined parts, assembled project, fabrication processes, and related information becomes a silent demonstration to others of the thought, study, planning, and skills necessary to do a complete job.

Location Important

If these displays are located in the main corridor where other teachers can easily see and study them, they may serve as an excellent conversational springboard for the industrial-education instructor to interpret his instructional program to his fellow workers. To go a step further, we always make it a practice to bring good exhibits into the headquarters office to give the administrative staff and board of education an opportunity to observe what is taking place in the industrial-education shops. Our superintendent, who is sensitive to good public relations, alert to every opportunity to improve understandings about our schools, and gracious in giving individual recognition, invites the teacher or departmental director to appear before the board of education to discuss the exhibit.

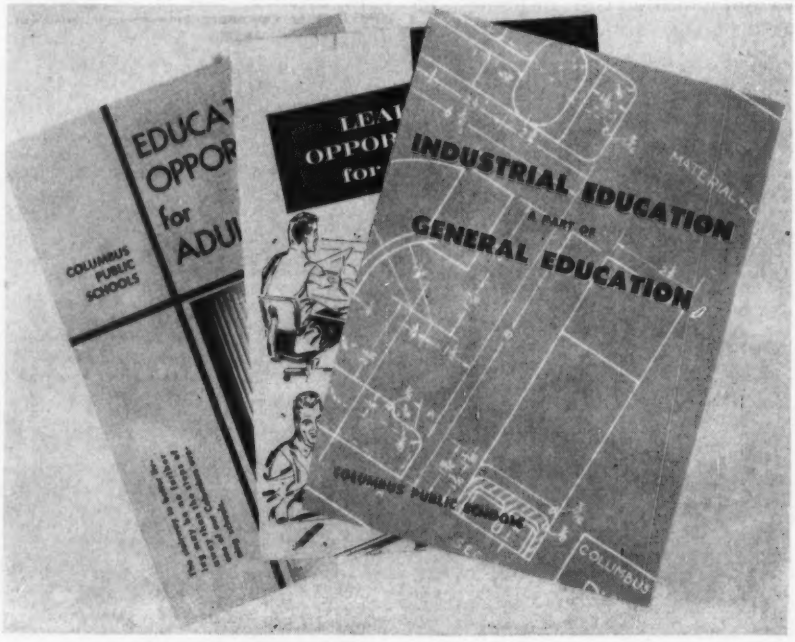
In one of our high schools, industrial-arts instructors sponsor a "Recognition Day" program. The school shops become a showcase to give each pupil an opportunity to display his best work. Industrialists, teacher educators, and instructors from other schools compose the judging teams. All of the pupils and teachers of the school are invited to the shops. An assembly program, in which the instructors have an opportunity to give individual recognition to outstanding pupils, follows.

Produce Assembly Programs

In some schools the industrial-education department is assigned the responsibility for a complete assembly program. This gives the pupils an opportunity to dramatize or demonstrate the many educational facets and the real worth of the industrial-education programs to a captive audience.

Nonindustrial-arts pupils may be awakened to the possibilities for creative expression, for putting their ideas into form, and for learning skills and techniques having vocational and avocational value. Teachers of other subjects may better appreciate the concomitant learning possibilities within industrial education and mutual benefits derived through cooperativeness.

To interpret industrial education to other teachers we must communicate by *showing* through photographs, films, television, exhibits, and demonstrations; by *telling* in speeches, in drama, on the radio, in writings, and publications; and by *discussing* in classes, conferences, professional meetings, and informal fellowship. ★



A case study of how

Stratford Informs Its Publics

By Charles Quinlan, Jr.
Director of Industrial Education, Stratford, Connecticut

"Stratford students visit industries for firsthand information . . ."

ONE of the great ironies – and virtues – of the democratic process is that despite the perfectly obvious need for certain things to help us achieve the good life, nobody can force them on us. Whether they be ideas or material goods they must be subjected to the rigors of the market place for all to examine, compare, and scrutinize before they are accepted and put into use.

In Stratford, Connecticut, we went through this process in developing a shop program for the comprehensive high school. We had to determine what our problem was, formulate a solution for it, present the solution to those in a "buying or not-buying" position, and settle for their decision.

Our problem, despite a unique state plan for administrating vocational education, was basically like many other cities, towns, and hamlets. Stratford is a lot like other communities but a brief description of it will serve as background for what follows.

In 1931 the population was about 15,000. Today it is approximately 45,000. It is a fairly typical middle-class community with a very large percentage of its people owning their own homes. There is not an estate-type residential area but neither is there a slum. About 40 percent of the population is of the traditional New England "Yankee" type. The others are of more immediate foreign extraction. This latter group makes up a highly skilled and well paid group of people employed in and about Stratford and neighboring Bridgeport, only a few miles away.

The present industrial curriculum was established in 1940. Up to that year a better than average industrial-arts program was being offered but there was strong feeling in many quarters that it did not meet vocational needs of students entering the labor market following graduation from high school.

As early as 1939 the Bridgeport Employment Council reported 32 percent of the Stratford area students were enrolled in the college preparatory program. Out of this group only 6 percent ultimately ended working in a professional field. Thirty-five percent were enrolled in the commercial program. Of these, 12 percent ultimately entered work in the field. Three percent of the students were enrolled in industrial-arts courses at that time and 65 percent of all students ended up in manufacturing and mechanical industries, including trade activities. The remaining students were enrolled in a general-type program preparing them – vocationally – for nothing.

Our problem should be beginning to reveal itself to you.

At the same time that the above was going on, I conducted a survey on my own which revealed the following: 20 percent of the boys graduating from high school were entering four-year colleges and the other 80 percent went to work – for the most part in industry and trades in the immediate Stratford-Bridgeport area. This information was disseminated widely. The newspapers published this information. The PTA's, industrial representatives, civic organizations, etc., all heard the story one way or another. The result was that the Stratford Board of Education decided that the comprehensive high school had the responsibility of teach-

Vocational Arts Program Gives Pupils Wide Choice Of Careers
THE BRIDGEPORT TELEGRAM, THURSDAY, OCTOBER 15, 1959
Stratford Students Win Industrial Art Awards
Take 13 of 14 Prizes in State During National Contest
STRATFORD
Stratford Schools Lead Again In Industrial Arts Awards
Stratford Is Urged to Expand High School Shop Facilities
INDUSTRIAL ARTS AWARDS GIVEN
Stratford School, Industry Leaders to Meet on Program

ing students not only "how to live" but also "preparation for earning a living."

Meetings, and more meetings, followed. Meetings with people from industry, meetings of folks from citizen groups – all resulted in a decision by the board of education to establish an industrial curriculum.

The program is neither industrial arts nor is it vocational education, but it does meet the needs of the students, who are, in the final analysis – regardless of what name it might go by – the reason for the program in the first place. The excellent facilities were made available by the community. No federal vocational funds were used.

The industrial curriculum is offered on two levels: (1) the industrial-arts division and (2) technical arts. Students enrolled in both divisions are scheduled for shop work and mechanical drawing for three periods per day for the entire four years of high school. Students who enter Stratford High School – except for transfers – are graduates of one of two junior-high schools where industrial-arts education is required of all boys in the seventh and eighth grades. This is exploratory.

Starting in the ninth grade they narrow their interests and intensify them gradually. It isn't until the eleventh and twelfth grades that students major in the areas that will prepare them for a job in one of the factories in or about the Stratford-Bridgeport area.

The technical-arts division is for students who intend to enter machine-shop work and mechanical engineering. On completion of the course, graduates have marketable skills which qualify them for further in-service training to become machinists, tool makers, die makers, set-up men, inspectors, tool designers, mechanical draftsmen, machine designers, etc. Or they can enter college in the mechanical engineering field because of the academic courses required. The industrial-arts division is primarily for students who are neither interested in, nor have the inclination for work and success in, mechanical engineering or machine-shop work. This division differs from the technical division on the math requirement. Only one year of technical mathematics is required in the industrial-arts division. Students in this division can prepare for entry into carpentry, cabinetmaking, graphic arts, power mechanics, sheet-metal, welding, foundry work, or service occupations.

". . . and English, Latin, and science teachers visit school shops to learn what happens there . . ."

From the outset, industrial-curriculum students – numbering almost 60 percent of the male population of the high school – are eligible for the same scholarships, honor societies, honor rolls, student activity groups, societies, etc., as students in other programs.

The industrial curriculum has been credited with keeping the drop-outs before graduation to one of the lowest in the state and approximately 75 percent above the national average.

Up to here you have been told about our community, what our problem was then – analyzing our secondary-school situation in terms of the realities of employability of our young people on graduation from high school. Presently we are building a second comprehensive high school in Stratford. We plan an improved version of our original industrial curriculum for the new school. Its adoption and acceptance are based on two factors: (1) the success of the original program and its graduates; (2) a ceaseless effort to keep school executives, parents, industry people, town folks, students – *everybody* – acquainted with what is being done, what the program is accomplishing. Some of the ways we have gone about keeping everybody informed about our work follow:

1. *Shop visitation by teachers.* – All academic teachers (especially new

". . . even the town engineer contributes from his experience to architectural students . . ."

". . . meanwhile, back at the shop, students are taught to work with industry caliber machines . . ."

teachers) and guidance counselors enjoy "open gangway" to our shops. The administration feels it is helpful for teachers to see their students working in a nonacademic environment. Each year one of the school faculty meetings is given over entirely to shop visitation. Shop classes are conducted for an extra hour and a half after the regular school day has ended and the entire faculty is guided through the shops where they see students in action.

2. *Contest awards.* — Award winners get a thorough publicity treatment. Local newspapers publish stories about the prize winners, as do school newspapers. The awards are made in a school assembly right alongside of the "academics" getting their kudos. A list of all awards won is given to the board of education, principals of the senior-high school and both junior-high schools, and guidance counselors. The awards are also listed in the school daily notice bulletin that is read aloud in all homerooms. Award trophies, cups, and other memorabilia are displayed in the school's trophy case in the main lobby of the high school.

3. *Graduation awards.* — Two students are awarded cash prizes each year for excellence in technical and industrial arts. These first and second awards are donated by the community American Legion Post. They are awarded at commencement exercises.

4. *Chamber of Commerce meetings held at the high school.* — Every two or three years the Stratford Chamber of Commerce, which includes the town's leading businessmen as well as leaders of local industry, hold an evening meeting at the Stratford High School. All of the shops are in full swing from 7:30 to 9:30 that evening. Chamber members are guided through the shops by the Ushers Guild — a school organization made up exclusively of young ladies. After the tour the members discuss the program with the director and school administrators. These visits have often brought invitations from visiting industrialists and businessmen to students to visit plants and business places. Promises of employment have even been extended to promising students as a result.

5. *Citizens committees meet at the high school.* Citizens committees, including representatives from industry and board of education members, frequently are invited to visit the high school where they are served a lunch prepared by home-economics students. Following lunch, the guests visit the shops and watch the boys working. The visitors are encouraged to, and often do, engage shop students in conversation regarding their shop work, their academic studies, and their plans for their futures.

(Continued on page 94)

". . . and parents and other citizens are frequent guests in Stratford school shops where they learn what their youngsters are doing and what happens to their tax dollars . . ."

Reasons for and methods of

Interpreting Your Program to the School Administration

By M. J. Ruley
Supervisor of Industrial Arts and Vocational Education,
Tulsa, Oklahoma, Public Schools

SUPERINTENDENTS, principals, supervisors, and other administrative officers need to know what industrial education is all about if it is to be an effective part of the total educational program of the school system.

In the all-important task of interpreting industrial-education programs to the school administration, we should first look at the philosophy of the school, the program of industrial education, and the individuals who are to interpret the program.

A school philosophy emerges from group action. It should be the product of the critical thinking of many persons under optimum conditions of communication. Such a philosophy, to be effective, should be a personal conviction of all those concerned with the instructional program and a motivating force in all that is done for children and youth in the school.

From the concepts of democracy as a way of life which is concerned with the needs, interest, and welfare of man, and of the democratic process which places the burden on the individual working with others as a means of achieving this welfare, the purposes of education emerge.[1]

The acceptance of these purposes would obligate the school to provide experiences for the development of certain interests, knowledges, understandings, skills, and attitudes which are basic to the achievement of such purposes.

With this philosophy as a basis, the interpretation of a program of industrial education to the administration is made much easier provided, first, that the philosophy is generally accepted in the school system and, second, that the program of industrial education is consistent with it. The philosophy just stated is one generally accepted by the Tulsa Public Schools through the interaction of many groups since 1948.

The supervisor's first responsibility, then, in implementing a philosophy of education based on respect for the individual, is to practice such a philosophy in his relationships with coworkers.

The principal of Will Rogers High School, Tulsa, Dr. R. W. Knight (left), is told about the offset camera by Mr. Eliseo Sanchez, instructor, while Supervisor Ruley observes.

Understandings Needed

The administration should understand that the basis of the industrial-education curriculum is modern industry; that the industrial-education curriculum has developed over the years with the selection of skills and information adaptable to school shops and drafting rooms from the vast reservoir of modern mechanical and scientific knowledge; that industrial education is an integral part of the school curriculum, rather than a special subject; that efforts are being made to coordinate industrial-education instruction with other departments of the school.

To implement the industrial-education program, we might pose the following questions: What are the purposes of supervision? How does change in the quality of teaching take place? How can supervisors help bring about change? What are the personal and professional competencies of an effective supervisor? What are the specific responsibilities of supervisors to administrative personnel, including principals, to teachers, to the public, to each other?

In order that a good relationship may be established with administrators and others, the industrial-education supervisor, department chairman, or teacher should possess certain characteristics as follows:

He is well-informed in his area of professional responsibility.
He is open-minded.
He is emotionally mature.
He is enthusiastic and resourceful.
He is skillful in promoting good school-community relations.
He is loyal.

([1]See footnote on page 100)

He is effective in oral and written communication.

He has the physical health and energy required for assuming his responsibilities.

He practices good human relationships.

He recognizes supervision as educational leadership.

He knows his job and does it.

He knows his administration and works cooperatively in this relationship.

He makes his department an integral part of the school.

He knows and follows school administrative policies.

He keeps his administrator informed as to what he plans to do and what he has done.

He gives credit when credit is due.

He is an active citizen of the community.

He is an effective public relations contact for the entire school.

With these characteristics, there should develop the degree of mutual understanding, respect, and friendship necessary for effective personal and professional relationships with administrators.

The purpose of supervision is to help school personnel to change in such a way that they will provide a better program of education. Change may be needed in philosophy, in content or emphasis, in procedures and techniques, in classroom organization and management, in ways of working.

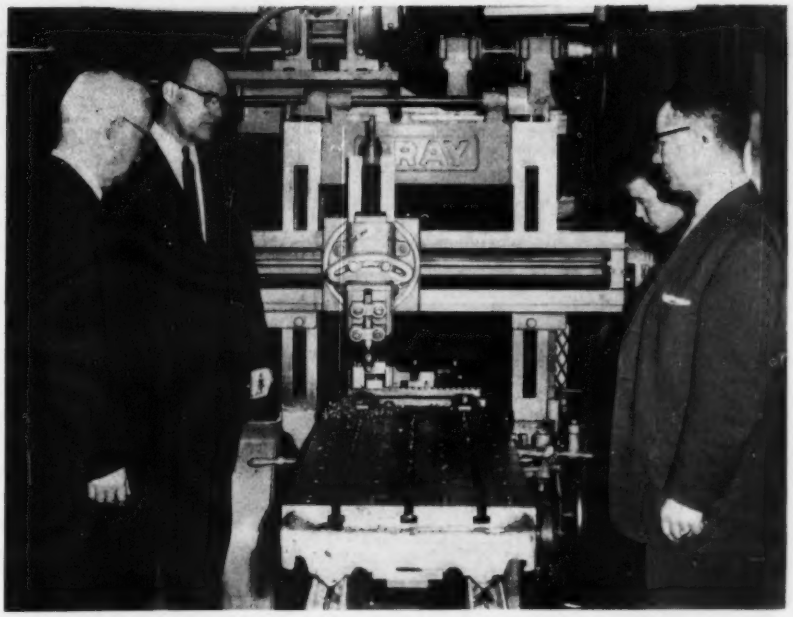
The supervisor or teacher, as he works with people, should be able and willing to set the stage for action in which the atmosphere is permissive for growth.

Team Members

It sometimes happens that educators, in the field of industrial education, live closely only with those who already understand their phase of education, thus isolating themselves from the larger school community. If such a withdrawal has taken place, it is time for action to incorporate the industrial-education staff as an integral and important part of the entire faculty of a school system. They should not give the impression that they consider their work separate from the rest of secondary education. All educators are members of a team concerned with the unique function of education in a democracy.

I try to keep both ends of the street open by taking an interest in what others are doing, and how I can help them or how they can help me. Developing mutual respect and understanding with the administrative staff pays dividends and helps to keep the lines of communication open.

Working with various members of the administration is a continuous thing, especially if the system is growing and new staff members are constantly being added or changed. One must be patient and make a sincere effort to interpret industrial education to the new administrators as well as those with whom he has been working.



The author, on the right, explaining the vocational machine-shop program to Dr. Jess Hudson, left, assistant superintendent for instruction, and Mr. Leroy Tharp, director of secondary education, at Tulsa's Central High School as a student operates a planer.

I have made it a practice to sit down with both new and old administrators and explain the various phases of industrial education. In the 12 years that I have been responsible for the program, I have involved administrators in helping to make long-range plans for approximately five-year periods. These plans are discussed with administrators, department chairmen, and teachers. Such goals have helped the program and put into operation a number of classes that never would have materialized otherwise.

At the present time such a five-year plan, or set of goals, is being established. These goals are being discussed with principals and central office staff, for without their help many of the proposals would not be possible. After many conferences, detailed information has been made available to staff members, and the proposal or proposals have been given to the superintendent for approval.

Facts Are Needed

A supervisor should have facts available to present to the board of education, to the superintendent, or to anyone else, if he is called on for further information to explain his plans. The superintendent is the key to any such plans. If he is in agreement and understands the over-all plan, the supervisor's requests will generally receive approval.

In our large system, such plans are presented to the superintendent by the administrator in charge of instruction, who is my immediate superior and who understands and accepts — or rejects — the plans for industrial-education courses. In some instances, I have been asked to explain plans to the superintendent and in a few cases, the superintendent has asked that I appear before the board of education for further interpretation of the proposal. This has been true where new and different programs are being proposed.

Much of my time is spent in working with principals of the secondary schools. In the junior-high schools, an exploratory program of industrial arts requires constant counseling on my part to make scheduling of the various areas possible. In new schools, with large enrolments, it is not always possible to follow scheduling as recommended; likewise, schools with small enrolments present a similar problem.

As a member of a group of supervisors and principals studying the junior-high school, I was able to present our program of industrial arts

(*Continued on page* 98)

Some techniques that led to success in telling

Waukegan's Story to Industry

By Albert O. Remde

Chairman, Trade and Industrial Education,
Waukegan, Illinois, Township High School

THREE-THOUSAND dollars for one error in surveying! Thirty dollars for one course in surveying? The construction company did not know that surveying was being taught in a nearby high school as a part of the trade extension program. The school did not know that $3,000 errors were being made. Obviously industry and education needed to be better informed of what the other was doing.

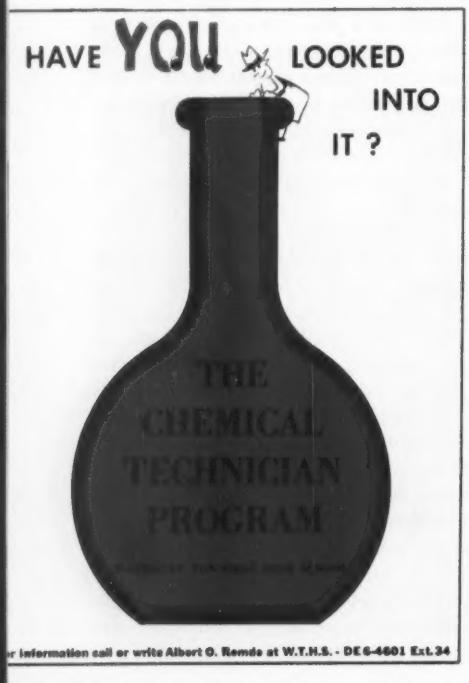
How did we tell our story to industry? What did we do? How did we do it? What were some of the techniques used? In other words, what are the details of procedure essential to expertness of execution?

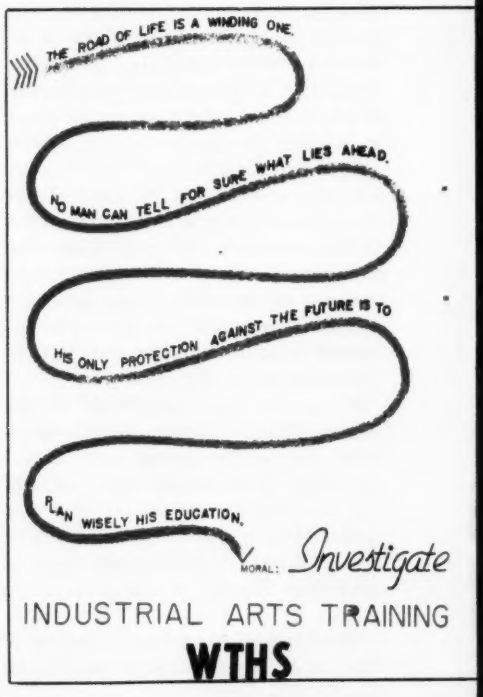
No claim is made to "expertness of execution." Simply stated, the following paragraphs merely illustrate the things done and the way they were done. Any one or all of these techniques might be used in a given local situation.

Make extensive use of advisory committees.—Advisory committees are willing to assist in publicizing a training program within an industry or a trade. The more people that you can interest in a program the better are its chances of success. Too often the publicity function of a joint apprenticeship committee is neglected with disastrous results. Ask your committees for help! Tell them how they can help! You can be sure they will help!

Recently advertising brochures were needed to publicize our technician-training programs. Advisory committee members were informed. Arrangements were made for artistic, photographic, and journalistic talent needed to produce the brochures. Thus, a difficult job was made easier through planned cooperative effort.

Personalize your contacts.—Get to know personally the man at the other end of the telephone line. Know the training director, supervisor, foreman, and worker. The better you know these men, their training problems and needs, the better you will be able to serve them.


HAVE YOU LOOKED INTO IT ?
THE CHEMICAL TECHNICIAN PROGRAM
r information call or write Albert O. Remde at W.T.H.S. - DE 6-4601 Ext. 34


THE ROAD OF LIFE IS A WINDING ONE.
NO MAN CAN TELL FOR SURE WHAT LIES AHEAD.
HIS ONLY PROTECTION AGAINST THE FUTURE IS TO
PLAN WISELY HIS EDUCATION.
MORAL: Investigate
INDUSTRIAL ARTS TRAINING
WTHS

Form a training association.—Make it easier for education and industry to cooperate within an area. The Lake County Industrial Training Association was organized several years ago. Membership in it is made up of training directors and supervisors from industry, coordinators of apprentice training and trade extension, and local directors of vocational education. Regularly scheduled meetings are held five times each year.

What can such a training association do? First, it establishes a powerful two-way communication system between the school and industry. Second, it provides the personalized contact that is so important. What are the training needs of an industry now? What can education do to fulfill these needs? Find out today – not six months or a year from now. Third, there are many incidental benefits to both industry and education. Education will take note of industrial progress and, as a result, will keep its curriculums up to date. For example, it may be that a course in electronics should be established in your high school next year.

Training needs common to several industries can be discussed firsthand. Too often we fashion our courses for one industry when a few changes would result in a much better course that could serve several industries.

Keep training directors informed. – Course-of-study outlines should be sent to training directors *before* you ask for their support of a program. They want to see, on paper, what they are "buying." These outlines are often posted on plant bulletin boards. The prospective student can then determine if the course suits his needs.

This corridor display case in the West Campus High School, Waukegan, Ill., is part of the "hardware" of public relations. Note the excellent lighting. Access is from back.

Have an annual dinner. – Honor the graduates in your apprentice training programs. Various awards, honors, and diplomas for the year may be presented on this occasion. We invite school administrators, union officials, joint apprentice committee members, representatives from state office of trade and industrial education, and the U. S. Bureau of Apprenticeship. Reputedly, this is considered one of our finest and most effective publicity efforts.

Maintain an active membership in organizations. – The local industrial supervisors club, engineering society, and service clubs will help in carrying your message to industry and labor. Become a member of these groups and similar organization.

Make an annual written report of your activities. – Make an oral presentation, also, of this report to your school administration and board of education. Answer such questions as: What have you done this year? How many apprentice training programs do you have? How many practical nurse students have you enrolled this year? What is the financial status of each program? Are there some training areas in which you need financial assistance? Tell your story!

Use your graduates in telling your story. – Form an alumni association. The continuing success of your practical nurse program may depend on it. Alumni will help in recruiting new students, and in obtaining scholarships for the needy student. The *esprit de corps* of the alumni will result in a bigger and better program.

Know the "hardware" of publicity. – Do you use posters, brochures, catalogs, newspaper articles, classified advertising, spot announcements on the radio, display cases in school corridors? Do you send representatives to high-school career days? How about an "open house" for a select clientele from industry?

Let industry tell you their story. – Tell them yours, too. Paradoxical? Not at all! Representatives of industry have often talked about engineering to our drafting classes, and about chemical technicians to our chemistry classes. The insights gained by industry and the school have resulted in a cooperation that has more than repaid the time spent.

Let's not neglect our opportunities. Let industry *know* that we can and will help. The response will be tremendous. A broad, well-established, and esteemed program will be the result. ★

YOUR DOORWAY TO

SUCCESS

WAUKEGAN
TOWNSHIP HIGH SCHOOL

ADULT EVENING CLASS

"BASIC HYDRAULICS FOR MAINTENANCE WORKERS"

Place: Des Moines Technical High School, 1800 G-
Starting Date: September 22, 1959
Day: Tuesday Tim-
Cost: $7.50

ADULT EVENING CLASS

"BASIC INDUSTRIAL CHEMISTRY"

-hool, 1800 Grand Avenue

ADULT EVENING CLASS

"HUMAN RELATIONS FOR SUPERVISORS"

Place: Des Moines Technical High School, 1800 Grand Avenue
Starting Date: September 24, 1959
Day: Thursday Time: 7:00 to 10:00 Total Hours: 30
Cost: $8.00

COURSE CONTENT

Today's industrial supervisor seldom has problems with machines, equipment or materials that he cannot readily solve. The real problems he faces are those that involve the handling of his employees. It is in this broad area of Human Relations that this course deals. Such items as "Giving Orders That Get Results", "How to Handle Employee Grievances", "Maintaining Employee Morale" are covered in discussion meetings of an informal nature.

Instructor: James N. Moriarty, Training Director Ford Implement Plant
(14 years as production supervisor and training director)

Public relations is student centered in

Des Moines—Where Students Are "P-R" Agents

By John W. Bell
Director of Industrial Education, Des Moines, Iowa

A PUBLIC-relations program in itself is of no value unless it is backed up by an instructional program that is geared to the needs of the community and staffed by teachers who are willing and able to teach.

In Des Moines we feel that public relations starts in the classroom and the shop with a healthy relationship between the teacher and his students. The teacher must maintain an atmosphere in which the student feels that he is learning at all times. Such an atmosphere is developed only when the teacher teaches, checks and tests learning accomplished, and then proceeds to reteach as needed.

The best public-relations agent in industrial education is a student who has successfully acquired skills and knowledges that he can put to use. He is quick to tell his parents at the dinner table that his shop teacher taught him something of real value. The adult student will do the same in his conversation with his employer and his fellow workmen.

Working Together

The industrial-education program in Des Moines starts in the junior-high-school industrial-arts shops and continues through high school, with a selection possible between industrial arts or vocational trade and industrial education, and then on into related instructional programs for apprentices and trade-extension programs for employed workers. All

Sitting around a table and working out a safety training problem in Des Moines is a committee made up of A. B (Abe) Musselman (from left), coordinator of apprenticeship education; Russell Kelso, supervisor of apprenticeship and education, U. S. Department of Labor; Ray Hobson, business agent, Bricklayer's Local Union No. 2; Bob Farrell, executive director, Des Moines Construction Council; and Bob McVey, business agent, Ironworker's Local Union No. 67. Committee organization and efficient meetings are vital.

of these teachers are members of one industrial-education department and have excellent working relationships with each other.

Quite often committees will have membership from both industrial arts and vocational trade and industrial education so that good relationships are maintained. The trade and industrial teachers feel that a sound program of industrial arts is basic and fundamental to a good program of vocational-technical education. By the same token our industrial-arts teachers feel that a student should be directed into our vocational-technical program as soon as he has shown a desire and an aptitude for a particular trade or technical field.

Good relationships with other departments are maintained by the philosophy of our industrial-education department: that we are a part of the total educational program maintained for the community and that industrial education is not the tail waggin' the dog. Our industrial-education teachers are a definite part of the faculty of the school in which they teach. They are active in all school business and extracurricular affairs.

At the administrative level the same cooperation with other staff members and school principals is maintained. Since cooperation is a "two-way street" we feel that our department should always maintain a spirit of willingness to work with and, on occasion, for other departments. All of our vocational-technical instruction is taught in Des Moines Technical High School and, since it is pretty much the backbone of the school, we feel that industrial education has a real stake in the relations program that we operate with other departments as well as the public in general.

Dr. John H. Harris, our superintendent of schools, has been a vital factor in promoting industrial education. Immediately after Tech occupied its new building he insisted that all teachers should be conducted on guided tours throughout the entire plant, be given an explanation of how the school is a definite part of the total educational program in Des Moines, and shown how they can help acquaint all students with the programs available in the school. Since then regular visits by elementary teachers and their pupils have been made so that the pupils can see our programs in action.

A big drawing card for these pupils is our own educational radio and television station where they can see the studio and station operated by Tech students. All major civic clubs, business and industrial groups have held meetings in the Tech building and have made tours through all shops and classrooms. We are extremely fortunate in having such administrative help in promoting industrial education with our fellow teachers and the public.

The idea of American Education Week, with its emphasis on visiting your schools, was spawned in Des Moines, immediately following World War I, by our local school system, the National Education Association, and the American Legion. We have always felt that the public should have first-hand information concerning its schools.

Industrial Contacts Made

We have two coordinators in our industrial-education department, Mr. R. C. Cramlet and Mr. A. B. Musselman. Ross and "Abe," along with their regular responsibilities in the department, are real "bird-dogs" in the field of public relations. They are in constant touch with industry; Mr. Cramlet with production management, personnel directors, and training directors; and Mr. Musselman with organized labor groups, foremen, and contractors. Through our coordinators we are able to keep industry informed concerning our industrial-education department. We are also able to keep our department informed concerning trends and needs of industry.

Prior to starting regular night-school classes, every bulletin board in practically all of our local industries and labor halls carries class schedules and other announcements con-

(*Continued on page* 104)

Evening Courses in Trade, Industry and Business

Des Moines Technical School

1800 Grand Avenue ♦ Main Center Entrance

Fall Term Opens September 21, 1959—7:00 P.M.

No special educational requirements for enrollment

A Friendly School For Working People

	Cost for Term
ACETYLENE WELDING Monday and Wednesday	$25.00
ARC WELDING Monday and Wednesday Monday and Wednesday	$25.00
ART LETTERING AND SHOW CARD WRITING Monday	$5.00
AUTO MECHANICS (Tune-up, trouble shooting, carburetor) Monday and Wednesday	$18.00
AUTOMATIC TRANSMISSIONS (G.M., Chrysler, Ford) Monday and Wednesday	
BLUEPRINT REA	
	$7.50 Per Month
UMAN RELATIONS FOR SUPERVISORS Thursday	$8.00
HYDRAULICS, BASIC Tuesday	$7.50
INCOME TAX PREPARATION Monday	$5.00
MACHINE DRAWING Monday and Wednesday	$14.00
MACHINE SHOP PRACTICE Monday and Wednesday	$16.50
MATH FOR MACHINISTS AND TOOL MAKERS Tuesday	$10.00
METALLURGY AND HEAT TREATING Tuesday	$12
POSTING MACHINES Monday	
	$4.50
AILORING (Bishop Method) Monday	$5.50
TELEVISION SERVICE Monday	$15.00
TOOL DESIGN Tuesday and Thursday	$10.00
TYPING Beginning: Monday and Wednesday 10 weeks Beginning: Monday and Wednesday 15 weeks Review: Monday	$10.00 $15.00 $6.00

Other courses offered for 10 or more adults

For a complete listing of courses at Des Moines Technical School and other centers, see advertising leaflet of Adult Education Department, Des Moines Public Schools

For complete information, telephone:

Des Moines Technical High School, Adult Division AT 8-9511, Ext. 204, Days; AT 8-9514, Evenings

Des Moines Public Schools, Dept. of Adult Education AT 8-9511, Ext. 261, Days

In this technological era

A P-R Program Is Not Enough!

By E. L. Barnhart
Head, Industrial-Arts Department,
Kansas State Teachers College, Emporia

FEW persons in the present age would take issue with the statement that good public relations are essential for the success of any enterprise, public or private. Leaders in business, industry, and, to an increasing degree, education have come to recognize the importance of a good public-relations program. Yet in recent years we have seen the collapse of many old, established industrial concerns, even though they had an active public-relations program. It is not the purpose of this presentation to analyze the multiplicity of factors that may have contributed to these failures, but it is appropriate to note that two of these factors are (1) manufacture of a product for which there is an insufficient or declining market and (2) a disparity between the qualities claimed for the product and those actually possessed by it.

Just what is the connection between the failure of established industries and a discussion of public relations for industrial arts? It should be obvious to anyone connected with education that the present status of industrial arts in the total educational program is far less secure and enviable than it has been for many years.

We appear to be in the position of the manufacturer who has found his sales declining during a period of prosperity. Perhaps his product is as good as ever and as good as that of his competitors, but his competitors' promotional activities may be superior. On the other hand, his product may have failed to keep pace with the changing needs of the world. A manufacturer who has stubbornly limited his production to the manufacture of buggy whips could hardly expect to prosper in the space age. The failure may have been precipitated by reliance on the assumption that a good product needs no promotion. Another possible cause of failure of a business is the continuous emphasis in advertising on one quality or aspect of the product with the result that the public has overlooked its other qualities. It is also possible that the unsuccessful manufacturer has attempted to secure a share of the market by making exaggerated claims for his product. This kind of public relations, while it may succeed for a time, can only lead to ultimate disaster.

Our Present Dilemma

I hope this analogy will lead us to a better understanding of the possible reasons of our present dilemma. Certainly, one of the reasons for the deemphasis of industrial arts in some school systems, particularly in the upper grades, is the combination of events associated with the birth of the space age. It is not surprising that educators in the physical sciences and mathematics should seize this opportunity to further their interests. Only an inspired promotional campaign could have made these events redound to the benefit of the fields of social science, language, guidance, and even literature, art, and music, and to the detriment of industrial arts, which has much more obvious technological implications.

Looking deeper into the problem, we begin to see evidence of another of our failures. Not only have we, for the most part, been guilty of assuming that a good program would speak for itself, but what little we have done in the way of public relations has only tended to emphasize and reinforce the popular opinion that industrial arts is a motor skill subject and involves little real learning in the academic sense. How could anyone conclude otherwise, when our public-relations activities have usually been limited to the exhibition of projects, public demonstration of processes, and perhaps an open house that showed only machines, tools, and projects? Is the lack of attention to the development of thought processes only overlooked in our public-relations activities, or is it characteristic of the industrial-arts programs they represent?

In our professional literature, teacher-training courses, and conference discussions, we profess to play a major role in the general education of elementary and secondary pupils. We become irked when we find that our academic colleagues, our school administrators, and the general public fail to understand this as our purpose and refer to industrial arts as a special field of education; yet, if after years of claiming to fulfill general-education objectives, we are not welcomed into the fold, is it not reasonable to consider the possibility that our practices and perhaps even our stated objectives are not broad enough to justify this claim?

Slighted Objectives

Education cannot truly be called general unless it contributes to the development of understandings, attitudes, and skills (motor). On the surface, it might appear that our objectives cover all of these categories, but as we delve into the problem, we begin to find that we tend to slight some of these areas. Most of us would agree that we are not concerned with the development of a high degree of motor skill. Yet, our feeble attempts at public relations tend to emphasize this aspect.

With regard to attitudes, we are all doing our bit, conscientiously or not, to change student attitudes for better or worse. It is in the area of understandings that our objectives, in principle and practice, must be broadened and deepened if we are to continue our claim to general-education functions. To assist us in our thinking on this point, it will be advantageous to refer to the *Taxonomy of Educational Objectives*[1].

This publication is devoted to the means of classification of educational goals, particularly in the area of understanding, or the cognitive domain. This classification clearly distinguishes between the lower levels of understanding and those variously referred to as problem-solving, application of knowledge, and critical thinking. The levels of understanding, arranged in order of ascending levels of comprehension and beginning with knowledge of facts as the lowest, include comprehension, ap-

plication, analysis, synthesis, and evaluation.

Low Understanding Level

It is not possible in this article to provide an adequate description of each of these levels of understanding, but if the behavior changes listed in the AVA bulletin, *Improving Instruction in Industrial Arts*[2], are ranked according to the procedure outlined in the taxonomy, it will be observed that the majority rank at the lowest level of understanding and very few rank at the upper levels. Further, if we apply the taxonomy to the few published tests available in industrial arts, we find the situation to be even worse. Nearly all items in these tests, which should, theoretically, reflect the kind of teaching we do, fall at the lowest level of understanding, that of recall or recognition of facts.

The following question, taken from the *45th Yearbook of the National Society for the Study of Education*[3], is probably typical of published tests, and compares favorably with questions in the average teacher-made test: "In selecting an assortment of desirable woodworking tools, which of the following is most important? (a) Wrench, (b) Compass Saw, (c) Plane, (d) Hacksaw, (e) Center Punch." Yet, it can readily be seen that while such a question is objective, may possibly be valid, and may have many of the attributes of a good test question, it is certainly not measuring a high level of understanding. Rather it is measuring little more than recognition of fact.

A question such as the following from a test by Wilber and Hornbake[4], is infinitely better:

A student is making a cold chisel from tool steel. After securing the correct shape he heats the steel to a cherry red and quenches it quickly in cold water. Which of the following conditions is most likely to be obtained?

Conclusions:

A. The chisel will be too soft for use.

B. The chisel will be too hard for use.

C. The hardness of the chisel will not be affected by this treatment.

Directions: Read carefully the following statements. On the separate answer sheet, check those you would use to support your conclusion (or conclusions).

Statements:

1. Some kinds of steel will crack when cooled too quickly from high temperatures.
2. Heating steel and then cooling it slowly removes most of the hardness.
3. When steel is heated to a cherry red and then quenched quickly it becomes very brittle and hard.
4. Anyone should know that this kind of treatment will spoil the steel.
5. Just as we heat and quench copper to soften it so we do the same thing with steel.
6. Steel which has been heated and quenched in this manner is too brittle to use for tools.
7. The amount of carbon in a piece of steel determines the hardening qualities.
8. Steel manufacturers give full directions for hardening the various kinds of steel.
9. The presence of alloy in steel changes the procedure for hardening.
10. Cold chisels which are made in the school shops are not worthwhile anyway.

How many of us are using questions as thought-provoking as these? Yet, this is only a combination of one multiple-choice question and a series of true-false questions related to the same topic, arranged in unconventional form. For real measurement of understanding at a higher level, we must use questions of the following type[5]:

The formulation of reasonable hypotheses. A housing concern has made some experiments on methods of heating houses. A room was constructed with walls that could be heated or refrigerated at the same time that air of any temperature was being circulated through the room. Several individuals were asked to record their sensations as the conditions were varied as follows:

Trial	*Wall Temperature*	*Air Temperature*	*Sensations*
1	85°	85°	Uncomfortably hot
2	85°	50°	Uncomfortably hot
3	70°	85°	Comfortable
4	70°	70°	Comfortable
5	70°	50°	Comfortable
6	50°	50°	Very cold
7	50°	70°	Uncomfortably cold
8	50°	85°	Cold

How can you explain the sensation of "coldness" by a person in a room where the air temperature is 85° and the wall temperature is 50° (all temperatures Fahrenheit)? Consider the following questions and organize your thinking under the outline given below.

a) Make all the suggestions you can which you believe will explain why a person is cold in a room where the air temperature is 85° and the wall temperature is 50°. Give your reasons as to why you believe each of these suggestions will explain the phenomenon.

b) What kinds of evidence would you want to collect which would enable you to decide among your suggested hypotheses?

c) Now go over the suggestions which you have made above and select the one which you believe to be the "best" explanation and give your reasons for your selection.

A Time for Decision

The preceding discussion brings us to an important question and a decision which we must make. The question: Do we want to upgrade our statement of objectives and their practice in instruction and evaluation to qualify as a part of general education on a par with the areas of science, social science, and humanities? Many will immediately reply in the negative. They will say that we have already gone too far in the direction of making academic courses of our offerings and have deserted our unique opportunity to work with things, to develop hand skills, and to be creative. This writer will, however, side with those who take the affirmative side of the question, believing that much of the blame for our present unfavorable position can be placed at the feet of those who have so long clung to the development of simple skills in, primarily, one area of industrial arts and have hesitated to plunge into the newer and more technical areas of industrial arts, or even to give consideration to the technological knowledge that can be made a part of the traditional courses. Obviously, not all students can be expected to achieve at the intellectual level described in this discussion, and industrial arts can still offer opportunities for those who cannot. In most programs at present, however, we have nothing to challenge the superior student and little contribution to make to those whose interests lie in scientific areas.

We must reexamine our objectives and practices and realign them with the technological age of which we are a part, or the most extensive public-relations program cannot help us. Having done this, we will be ready to develop techniques and mediums for informing the public of our contributions to the development of thought processes as well as motor skills. A public-relations program is not enough!

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5. National Society for the Study of Education. *op. cit.,* p. 118. ★

Seven goals for

The Interpretation of Industrial Education

By Paul W. Briggs
Superintendent of Schools, Parma, Ohio

GOOD public relations in industrial education is based on an understanding of educational objectives and the proper relationship which industrial education should have to the whole. Any attempt to place this segment of education out of focus with the whole is unsound. The best public-relations program will sell industrial education as a complement to the total program. It will recognize the need for balance and identify the real role that industrial education should play. It will also recognize the changing role of industrial education.

The general rules which govern quality public-relations programs also apply to industrial education. Industrial education has many publics to be served and, therefore, its public-relations program must include all publics. Some of these publics include students, staff, parents, employer groups, colleges, community groups, etc. The approach to each may differ; however, one necessary element is common to all. This is the creation of a better understanding of the objectives and services of a quality program of industrial education.

Understanding Is Needed

Probably the most important present problem in industrial education relates to an understanding of its present position in the total educational program. This position has changed materially over the years. Great progress has been made during the past 25 years with the result that industrial education has taken a permanent place in the educational program. It possesses a degree of dignity and importance which may not be understood by many.

The opening of a new decade naturally invites speculation about the future. This is especially true of industrial education in 1960. The great technological advances of the last days of the previous decade were more spectacular than during any previous time in man's history. This new decade sees man reaching out into areas which for centuries had been forbidden. His wildest dreams seem about to become realities. We are reminded of the courage of the fifteenth century Spanish explorers who, saddled with a limited technology, sailed forth on unknown seas to discover a new world and to make a new way of life possible. Today highly trained scientists armed with new information about the universe, teamed with a brilliant technology, are poised on the verge of momentous discoveries.

Education has now become the key to advancement and survival. Our nation's concern over the training of scientists, mathematicians, and engineers is equaled only by her efforts to develop a technology which will implement the discoveries of her scholars. It is here that we find industrial education playing a key role.

As we speculate about the future, it is interesting to take a look at our industrial-education program, to review its progress, and to plan for its future. Here we must recognize that probably no one individual is endowed with the kind of knowledge or the degree of wisdom necessary to predict accurately the role of industrial education during the next decade. However, many forces will be brought into play before final decisions are made.

Educational Progress

The story of industrial education is a story of educational progress. It is a story about the development of the practical-arts program in American secondary schools. It is a new story and relates itself very closely with the recent rapid technological growth of America. The early introduction of industrial education came as high schools began to awaken to the necessity of preparing students, especially boys, for employment in a growing industrial society. Educators with vision saw the necessity to enlarge the school program to include the training of students for practical employment. Specialized labor forces were rapidly growing, opening many job opportunities at a time when our public high schools had a limited curriculum which did not include the practical arts or a program for semi-technical employment.

From humble beginnings shop programs have rapidly developed. The typical school shop, which a few years ago was housed in the basement area of high schools next to the furnace room, has now found a new and dignified place on the first floor in modern attractive school buildings. It may even be placed close to the science and mathematics departments. No community today can point with pride to its new high school if that building does not contain a well designed and well equipped area devoted to industrial education.

The truly functional high school today must of necessity meet the needs of all of the high-school-age students of the community. It must not only prepare students for future college and university education but must also prepare students for employment. While the preparation for college is undergoing reexamination, the preparation for vocational employment probably will experience the greatest change. New machines and methods have so changed the system of production that the labor force of tomorrow will be made up of many highly skilled technicians. Our schools must be ready to supply these technicians.

The continual change in technical needs and the mobility of American laborers all make for problems which must be faced by educators as they plan for the future. One thing is certain. Our technical advancements must keep pace with science. We can-

(*Continued on page* 76)

AT KENT STATE WITH DELTA

Shop teachers go to school

Delta expert shows how minor adjustments can help keep tools in top operating condition, prevent delays due to breakdowns.

DELTA PM SHEETS—Parts Maintenance Instruction Sheets are included with every Delta tool delivered—contain handy tips on routine machine care in addition to exploded diagrams for easy identification of parts. PM Sheets cover Delta's 63 machines, 302 models, over 1400 accessories.

Recently Kent State University conducted a School Shop Equipment Care and Maintenance Workshop as part of a graduate program in teacher training. Delta played a key part in this program by providing the assistance of two factory-trained specialists to act as "professors of machinery." Teacher-students were instructed in normal maintenance adjustments and repairs and given the chance to disassemble and reassemble equipment. By solving actual breakdown problems, teacher-students learned tool nomenclature, schematic interpretation and ordering of parts.

This is typical of the cooperation and service Delta has rendered in serving the school field for over 31 years. Your nearest source for the finest, safest tools your students can use—the same rugged, economical tools used throughout industry—is your Delta Distributor. He's listed under "TOOLS" or "MACHINERY" in the Yellow Pages. Call him soon . . . and for FREE Delta catalog write: Rockwell Manufacturing Co., Delta Power Tool Division, 412-D N. Lexington Ave., Pittsburgh 8, Pa. In Canada: Rockwell Manufacturing Co. of Canada, Ltd., Box 420, Guelph, Ont.

DELTA INDUSTRIAL TOOLS

another fine product by

ROCKWELL

DEVELOPMENT OF DESIRABLE TRAITS AND HABITS

IN TERMS OF GOOD CITIZENSHIP

1. Cooperation
2. Dependability
3. Resourcefulness
4. Economy of time and materials
5. Craftsmanship

How to tell about

Your Program in Sight and Sound

Sigfreid A. Schreiner
Coordinator of Industrial Arts, Westport, Connecticut

WHEN parents begin saying things like the following, there must be a reason: "I wish my son could enter the shop program."

"I never realized that the boys make such wonderful things."

In our school district, the reason for such statements is found in a sound-slide presentation we made ourselves for showing to community and school groups.

We realized that the community lacked information about our industrial-arts program so we put together a series of 2" x 2" colored slides with a synchronized tape narration to go with them. Anyone who can run a slide projector and a tape recorder is welcome to use the presentation. Administrators, guidance personnel, and other faculty can and have used it, as have our own industrial-arts people, of course.

Preparing such a presentation takes some time, thought, and work, but it is well worth the effort. Here is the way we went about it.

First, we took about 50 pictures in each of our industrial-arts areas: woodworking, metalworking, and drawing. These showed students using hand and machine tools and working on projects. From the 150 slides we picked out the best 75 for use.

Titling came next. For the opening title frame we took six industrial-arts books and laid them on a flat surface next to one another. A piece of 20" x 24" glass was placed on top of them to support colored letters for the wording of the title. For other title slides that appeared at various intervals in the presentation, we typed the material on colored paper and photographed it with a close-up lens on the camera. These stated some of the objectives of our program.

The slides were numbered for the proper sequence in presentation and one corner was notched so that they would be right side up and right side to when shown.

A script was then written for the taped narration to accompany the slides. This took time and care as it had to be synchronized with the slides. For example, the narration for a slide which shows two students pouring molten metal into a sand mold follows:

"Cooperation is essential in many operations in the metal shop as evidenced in the handling of molten metal."

As can be seen from the above, we worked some of the general objectives of industrial arts into the narration.

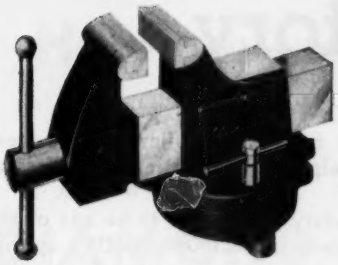
The script had to be synchronized with the slides in order to make a smooth presentation. We had a dry run of reading the script for timing purposes. Then we made some changes in the script for better synchronization and were ready for the taping.

The script was taped with the insertion of a signal for slide change. For this purpose we used a "cricket." Then we added background music by running the script tape and music simultaneously and picking up the synchronized material on another

(*Continued on page* 77)

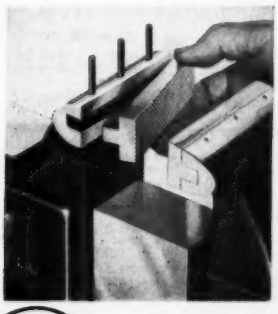
Illustrated at left are typical slides from our public-relations presentation. At the top is one of the title shots which was done on colored paper. All of the films are in full color. The narration for the slides shown is as follows:
(1) "The lathe is the backbone of the machine shop. All machined round pieces are done on some type of lathe. Here a sophomore student is making a knurl."
(2) "Not all metalworking instruction is in the shops. Here we have a class receiving related information pertaining to the metalworking industry."
(3) "A student turning a bowl on the wood lathe. The lathe is a link between machine and hand tools, combining the art and skill of handwork with the speed and power of the machine."
(4) "A senior boy sanding his cobblers' bench. This is a very popular project."
(5) "Here we have the instructor of mechanical drawing discussing different points in the construction of this original model house, designed and built by the student."

STRONGER • MORE POWERFUL • GUARANTEED UNBREAKABLE



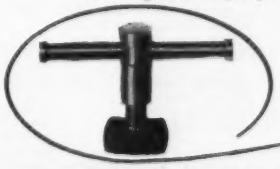
COLUMBIAN MACHINISTS' VISES

1. "T" section hardened tool steel faces pinned to jaw. Easily replaceable.
2. Malleable iron front jaw with heavy internal ribs for added strength. Guaranteed unbreakable!
3. Steel handle balls forged from handle stock. Can't come loose.
4. Powerful cold-rolled steel screw.
5. Self-lubricating graphite bronze thrust bearing. Reduces friction. Prevents wear. Eliminates end play.
6. Front jaw beam covers and protects screw.
7. Longer back jaw body for perfect alignment. Malleable iron castings guaranteed unbreakable.
8. Large ground and polished anvil.
9. Precision-machined nut and back jaw keyway guarantee positive alignment.
10. Malleable iron base. Guaranteed unbreakable. Swivels full 360°.
11. Forged steel, tapered-gear lock bolt prevents slippage.



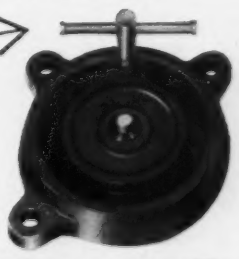
REPLACEABLE JAW FACES

Outstanding among Columbian features are replaceable hardened tool steel "T" jaw faces. Drive pins anchor faces securely in castings, so they cannot come loose, but are easily replaceable. Solid gripping surface covers entire jaw face area. Smooth jaw faces available without screw heads or screw holes in gripping face.



COLUMBIAN SWIVEL KIT CONVERTS STATIONARY VISE TO SWIVEL BASE VISE

3 - 3½ - 4 - 4½ - 5-inch Columbian stationary base Machinists' Vises are easily converted to Swivel Base Vises by addition of the Columbian Swivel Kit. Swivel can be installed in 2 minutes. Kit includes swivel base, lock nut, lock bolt, center bolt, washer, bushing and plug cap.



Write for Catalog NO. 60

for best advice about **VISES**... See your **COLUMBIAN** distributor

SLEDGE TESTED

THE COLUMBIAN VISE & MFG. CO. Cleveland 4, Ohio

A-1311 A

Suppliers Directory

For the 17th successive year, SCHOOL SHOP offers to its readers this extensive and up-to-date guide to sources of equipment and supplies needed in shop work. Listed below are the manufacturers and distributors of more than 234 classifications of products, ranging from Abrasive Paper to Wrenches, Torque.

The sources of supplies are listed first under the various classifications. Following this, starting on page 62, is the alphabetical list of all the firms included in the first section. To use the directory, look under the classification first to find the suppliers of the item needed, then use the alphabetical list for the addresses of the firms.

The Suppliers Directory has proved to be one of the most popular and helpful of SCHOOL SHOP's special features. Be sure to keep this issue handy, so that when you need supplies and equipment during the coming year you will know where to write for catalogs and information. Please be sure to mention SCHOOL SHOP when writing.

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Boice-Crane Co.
Brodhead-Garrett Co.
M. L. Campbell Co.
Chown Hardware Co.
Albert Constantine & Son
D. W. Cope Plastics
Craftsman Supply House
Craftsman Wood Service Co.
DeWalt, AMF.
Fry Plastics International
General Finishes Sales & Service
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
Sax Bros., Inc.
Skil Corp.

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Albert Constantine & Son
Craftsman Wood Service Co.
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DeWalt, AMF.
Millers Falls Co.
Frank Mittermeier
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Plastic Products Co.
Sax Bros. Inc.
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Tepping Studio Supply Co.

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Chown Hardware Co.
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Mico Instrument Co.
Patterson Bros.
Seeley's Ceramic Service
Tepping Studio Supply Co.

AIRCRAFT TOOLS
Proto Tool Co.

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Aluminum Co. of America
Charles Beseler Co.
Better Light Better Sight Bureau
Charles Bruning Co., Inc.
Delco-Remy Division
Educational Television Aids
Electronic Kits Supply Co.
Jam Handy Organization
McGraw-Hill Book Co.
Projection Optics Co. Inc.
Teaching Aids, Inc.
United World Films, Inc.

AUTOMOTIVE ELECTRICAL ASSEMBLIES
Delco-Remy Division
General Motors Corp.

AUTOMOTIVE SHOP EQUIPMENT
(See also Hand Tools, Mechanics)
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Barrett Eqpt. Co.
Brodhead-Garrett Co.
Columbian Vise & Mfg. Co.
Dake Corp.
Duro Metal Products Co.
National System of Garage Ventilation, Inc.
Parent Metal Products, Inc.
Patterson Bros.
Proto Tool Co.
Shure Mfg. Co.
Skil Corp.
Stanley Tools
P. A. Sturtevant Co.
Tolerton Co.
J. H. Williams & Co.

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Barrett Eqpt. Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftools, Inc.
Delta Power Tool Div.
Parent Metal Prods., Inc.
Patterson Bros.
G. A. Pratt Co.
E. H. Sheldon Eqpt. Co.
Shure Mfg. Co.
South Bend Lathe, Inc.
Stacor Equipment Co.
Standard Pressed Steel Co.
Teaching Aids, Inc.
Tolerton Co.
UNIC Drafting Eqpt. Co.

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Berkroy Products Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Dake Corp.
Dreis & Krump Mfg. Co.
Greenlee Bros. & Co.
Hossfeld Mfg. Co.
O'Neil-Irwin Mfg. Co.
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Swayne, Robinson & Co.

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Chicago-Latrobe
Chown Hardware Co.
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Gizco
Greenlee Tool Co.
Irwin Auger Bit Co.
Millers Falls Co.
Frank Mittermeier
Patterson Bros.
Skil Corp.
Stanley Tools
U. S. Cutting Chain Mfg. Co.
X-acto, Inc.

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Air Reduction Sales Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Master Appliance Corp.
Patterson Bros.
Rogers Supply House
Sax Bros. Inc.

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Copymation, Inc.
Keuffel & Esser Co.
Modern School Supplies
Frederick Post Co.
Reproduction Eng. Corp.

BOLTS
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Southern Screw Co.

BOOKBINDING EQPT. & SUPPLIES
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Challenge Machinery Co.
Craftools, Inc.
Higgins Ink Co.
G. A. Pratt Co.
Turner Printing Machinery, Inc.
UNIC Drafting Eqpt. Co.

BOOKS
(See Publishers)

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Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
Greenlee Tool Co.
Millers Falls Co.
Patterson Bros.
Stanley Tools

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Boice-Crane Co.
Brodhead-Garrett Co.
Huther Bros. Saw Mfg. Co.
Oliver Machinery Co.

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Brodhead-Garrett Co.
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Hammond Machinery Builders, Inc.
Mico Instrument Co.
Patterson Bros.

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Chown Hardware Co.
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Craftools, Inc.
Craftsman Wood Service Co.
Delta Power Tool Div.
DeWalt, AMF.
Fry Plastics International
Frank Mittermeier
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
Rogers Supply House
Sax Bros., Inc.
Skil Corp.
UNIC Drafting Eqpt. Co.

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House of Plastics
Plastic Parts & Sales
Plastic Products Co.

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Swenson Mfg. Co.

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Chown Hardware Co.
Brodhead-Garrett Co.
Montgomery & Co., Inc.
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Patterson Bros.
Proto Tool Co.
E. H. Sheldon Eqpt. Co.
Standard Pressed Steel Co.
L. S. Starrett Co.
Tolerton Co.
X-acto, Inc.

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Albert Constantine & Son, Inc.
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Lufkin Rule Co.
Millers Falls Co.
Frank Mittermeier
Modern School Supplies
Montgomery & Co., Inc.
Patterson Bros. Co.
Scherr-Tumico
L. S. Starrett Co.
Stewart Clay Co., Inc.

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Eagle Mfg. Co.
General Scientific Eqpt. Co.
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Gemaco
Octura Models

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Immerman & Sons
J. C. Larson Co., Inc.
Patterson Bros.
Sax Brothers, Inc.
School Prods. Co.
Seeley's Ceramic Service
Stewart Clay Co., Inc.
Tepping Studio Supply Co.
Tolerton Co.
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X-acto, Inc.

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Stewart Clay Co., Inc.
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Western Materials Co.

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Sax Brothers, Inc.
School Products Co.
Seeley's Ceramic Service
Stewart Clay Co., Inc.
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Cincinnati Tool Co.
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Patterson Bros.
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Rogers Supply House
Stanley Tools
J. H. Williams & Co.

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Cincinnati Tool Co.
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Craftsman Wood Service
Delta Power Tool Div.
DeWalt, AMF.
Greenlee Tool Co.
Millers Falls Co.
Frank Mittermeier
Patterson Bros.
Sax Brothers, Inc.
Stanley Tools
Stewart Clay Co., Inc.
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Craftsman Wood Service Co.
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Jacobs Mfg. Co.
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Delta Power Tool Div.
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Adjustable Clamp Co.
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Cincinnati Tool Co.
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Precision pliers especially designed for easy convenient use in the hard exacting service of manufacturers of electronic instruments.

Diamalloy pliers stay snug in the joints, true on the points, and sharp on cutting edges in continuous service under which lesser quality brands soon wear out and have to be replaced.

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Craftsman Wood Service Co.
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Stanley Tools

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Craftsman Wood Service Co.
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Gilbert & Miller, Inc.
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Plastic Products Co.
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School Products Co.
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Turner Printing Machinery, Inc.
UNIC Drafting Eqpt. Co.
X-acto, Inc.

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Brodhead-Garrett Co.
Chicago-Latrobe
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Cincinnati Tool Co.
Delta Power Tool Div.
DeWalt, AMF.
Huther Bros. Saw Mfg. Co.
Maxwell Industries, Inc.
Patterson Bros.
Skil Corp.
South Bend Lathe, Inc.
J. H. Williams & Co.

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Fry Plastics International
Gilbert & Miller, Inc.
House of Plastics
School Products Co.

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Burstein-Applebee Co.
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Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
C-Thru Ruler Co.
Keuffel & Esser
Lufkin Rule Co.
Millers Falls Co.
Modern School Supplies
Patterson Bros.
Peck, Stow & Wilcox Co.
Frederick Post Co.
Scherr-Tumico
Stanley Tools
L. S. Starrett Co.
V & E Mfg. Co.

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Brodhead-Garrett Co.
L-W Chuck Co.
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
Universal Vise & Tool Co.

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Brodhead-Garrett Co.
Chown Hardware Co.
Craftsman Wood Service "Dowl-It" Co.
Patterson Bros.
Stanley Tools

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Chown Hardware Co.
Albert Constantine & Son
Craftsman Wood Service "Dowl-It" Co.
T. A. Foley Lumber Co.
Patterson Bros.

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Berger Scientific Supplies, Inc.
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Charles Bruning Co., Inc.
Burstein-Applebee Co.
C-Thru Ruler Co.
Fairgate Rule Co.
Keuffel & Esser
Modern School Supplies
Patterson Bros.
Frederick Post Co.
Reproduction Eng. Corp.
School Products Co.
Stacor Equipment Co.
UNIC Drafting Eqpt. Co.
V & E Manufacturing Co.
X-acto, Inc.

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Ajusto Eqpt. Co.
Alvin & Co., Inc.
Brodhead-Garrett Co.
Charles Bruning Co., Inc.
Garrett Tubular Prods., Inc.
Keuffel & Esser Co.
Modern School Supplies
Parent Metal Products, Inc.
Patterson Bros.
Frederick Post Co.
Stacor Equipment Co.
Standard Pressed Steel Co.
Tolerton Co.
UNIC Drafting Eqpt. Co.

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Higgins Ink Co., Inc.
Keuffel & Esser
Modern School Supplies
Oliver & Long Dev. Co.
Patterson Bros.
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School Products Co.
Stacor Equipment Co.
UNIC Drafting Eqpt. Co.
V & E Mfg. Co.

DRAWER ROLLERS

Swenson Mfg. Co.

DRILL PRESSES

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Clausing Div., Atlas Press
Craftsman Wood Service Co.
Delta Power Tool Div.
DeWalt, AMF.
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Lennox Tool & Machine Builders
Mico Instrument Co.
Patterson Bros.
Powermatic Machine Co.
South Bend Lathe, Inc.
Yuba Power Products, Inc.

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Brodhead-Garrett Co.
Burstein-Applebee Co.
D. W. Cope Plastics
Craftsman Supply House
Fry Plastics International
House of Plastics
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
UNIC Drafting Eqpt. Co.

DRILLS, HAND

Brodhead-Garrett Co.
Greenlee Bros. Co.
Millers Falls Co.
Frank Mittermeier
Patterson Bros.
Proto Tool Co.
Sax Bros., Inc.
Stanley Tools
X-acto, Inc.

DRILLS, PAPER

Challenge Machinery Co.
Patterson Bros.
Turner Printing Machinery, Inc.

DRILLS, PORTABLE ELECTRIC
(See also Portable Electric Tools)

Brodhead-Garrett Co.
Burstein-Applebee Co.
Chown Hardware Co.
Craftsman Wood Service Co.
House of Plastics
Millers Falls Co.
Patterson Bros.
Plastic Products Co.
Porter-Cable Machine Co.
Skil Corp.
Stanley Electric Tools
Sunbeam Eqpt. Corp.
Tepping Studio Supply Co.

DRILLS, TWIST

Brodhead-Garrett Co.
Burstein-Applebee Co.
Chicago-Latrobe
Chown Hardware Co.
Millers Falls Co.
Patterson Bros.
Rogers Supply House
J. H. Williams & Co.

DUPLICATING MACHINES

American Type Founders
Brodhead-Garrett Co.
Chas. Bruning Co.
Copymation, Inc.
Turner Printing Machinery, Inc.

DUST COLLECTORS

American Air Filter Co., Inc.
American Wood Type
Baldor Electric Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Craftools, Inc.
Delta Power Tool Div.
Hammond Machine Builders, Inc.
Mico Instrument Co.
Ohio Blow Pipe Co.
Patterson Bros.
Tepping Studio Supply Co.
Torit Mfg. Co.
UNIC Drafting Eqpt. Co.
Yates-American Machine Co.

ELECTRIC EQUIPMENT AND SUPPLIES
(See also Radio Eqpt.)

Brodhead-Garrett Co.
Buck Engineering Co.
Burstein-Applebee
DonJer Products Co.
Electric Hotpack Co.
Gearon Co.
Gyro Lamp & Shade Corp.
Lamp-Shade Accessories
Ohmite Mfg. Co.
Patterson Brothers
Precision Apparatus Co., Inc.
Rogers Supply House
Science Electronics, Inc.
Seco Mfg. Co.
Teaching Aids, Inc.
Tolerton Co.
Universal Scientific Co., Inc.

ELECTRIC MOTORS
(See Motors)

ELECTRONIC EQPT.
(See also Radio Eqpt.)

Allied Radio Corp.
Brodhead-Garrett Co.
Buck Engineering Co.
Burstein-Applebee
DonJer Products Co.
Electric Hotpack Co., Inc.
Electronic Instrument Co.
Electronic Kits Supply Co.
Heath Company
Magnaflux Corp.
Ohmite Mfg. Co.
PACO Electronics Co., Inc.
Patterson Bros.
Radio Shack Corp.
Rogers Supply House
Science Electronics, Inc.
Sprague Prods. Co.
Seco Mfg. Co.
Teaching Aids, Inc.
Universal Scientific Co., Inc.

ELECTRONIC TRAINING, EQUIPMENT & MATERIALS

Philco Tech-Rep. Div.
Science Electronics
Universal Scientific Co., Inc.

ENAMELING EQUIPMENT AND SUPPLIES

Bergen Arts & Crafts
Brodhead-Garrett Co.
Craftools, Inc.
Craftsman Supply House
Dremel Mfg. Co.
Electric Hotpack Co., Inc.
Immerman & Sons
Kit Kraft
J. C. Larson Co.
Patterson Bros.
Sax Brothers, Inc.
School Products Co.
Science Electronics, Inc.
Seeley's Ceramic Service
Stewart Clay Co., Inc.
Tepping Studio Supply Co.
Thomas C. Thompson Co.
UNIC Drafting Eqpt. Co.
Western Materials Co.

ENAMELING KILNS

Bergen Arts & Crafts
Brodhead-Garrett Co.
Craftsman Supply House
Electric Hotpack Co., Inc.
Immerman & Sons
Kit Kraft
Patterson Bros.
Sax Bros., Inc.
School Products Co.
Seeley's Ceramic Serv.
Stewart Clay Co., Inc.
Tepping Studio Supply Co.
Thos. C. Thompson Co.
UNIC Drafting Eqpt. Co.
Western Materials Co.

ENGRAVING MACHINES

Mico Instrument Co.
Scherr-Tumico

EXTRACTORS, PIPE, STUD, SCREW, TAP, DRILL

Brodhead-Garrett Co.
Chicago-Latrobe
Chicago Tool & Eng. Co.
Chown Hardware Co.
Frank Mittermeier
Montgomery & Co., Inc.
Patterson Bros.
Proto Tool Co.
J. H. Williams & Co.

FASTENERS, THREADED

Sharon Bolt & Screw Co.
Southern Screw Co.

FIBERGLASS
(See Plastics)

FILERS, DIE

Boice-Crane Co.
Brodhead-Garrett Co.
Sales Service Mfg. Co.

FILES, HAND

Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son
Millers Falls Co.
Patterson Bros.
Skil Corp.
Stanley Tools
X-acto, Inc.

FILES, ROTARY

Brodhead-Garrett Co.
Chown Hardware Co.
Frank Mittermeier
Patterson Bros.

FILING MACHINES

Boice-Crane Co.
Foley Mfg. Co.

FINDINGS, METAL

Brodhead-Garrett Co.
Cope Plastic Co.
House of Plastics
Immerman & Sons
J. C. Larson Co.
Lamp-Shade Accessories
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
School Products Co.
Thos. C. Thompson Co.

FLEXIBLE SHAFT MACHINES

Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son
D. W. Cope Plastics
Dremel Mfg. Co.
House of Plastics
Patterson Bros.
Plastic Parts & Sales
Plastic Prods. Co.

FLOORING

J. W. Wells Lumber Co.

FOLDERS, PAPER

Challenge Machinery Co.

FORGES

Brodhead-Garrett Co.
Chown Hardware Co.
Charles A. Hones, Inc.
Johnson Gas Appliance Co.
McEnglevan Heat Treating & Mfg. So.
Patterson Bros.
Sunbeam Eqpt. Corp.
Western Materials Co.

FORGE TOOLS

Broadhead-Garrett Co.
Patterson Bros.
Stanley Tools

FOUNDRY EQPT.

Brodhead-Garrett Co.
DeWalt, AMF.
Hammond Machinery Builders, Inc.
Charles A. Hones, Inc.
McEnglevan Heat Treating & Mfg. Co.
Patterson Bros.
Tolerton Co.
Western Materials Co.

FURNACES, PRINTERS, METAL

Nolan Corp.

FURNACES, SHOP
(Forge, Heat Treating, Melting)

Brodhead-Garrett Co.
Chown Hardware Co.
Craftools, Inc.
Electric Hotpack Co.
Charles A. Hones, Inc.
Johnson Gas Appliance Co.
Kasenit Co.
McEnglevan Heat Treating & Mfg. Co.
Frank Mittermeier
Patterson Bros.
Sunbeam Equipment Corp.
Western Materials Co.

FURNITURE
(See Shop Furniture)

GAGES, METALWORKING

Alina Corp.
Brodhead-Garrett Co.
Chown Hardware Co.
Lufkin Rule Co.
Magnaflux Corp.
Maxwell Industries, Inc.
Millers Falls Co.
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
L. S. Starrett Co.

GAGES, WOODWORKING

Brodhead-Garrett Co.
Chown Hardware Co.
Craftsman Wood Service
Magna-Set Co.
Millers Falls Co.
Miterite, Inc.
Patterson Bros.
Stanley Tools
L. S. Starrett Co.

GLAZIERS' TOOLS

Stanley Tools

GLUE POTS

Brodhead-Garrett Co.

WOODWORKING BENCH

Model 1000-L. Four-position with locker base. Top is 64" x 54" x 2¼"—laminated wood or Shop-Top. 33¾" working height. Also 2-position models, cabinet and open base models.

EXCLUSIVE SHOPTOP

Warp-free, splinter-proof! Solid core of laminated blocks with tough Resinwood surfaces. Resists acids, alkalies, oil, grease. Easy to keep clean.

HALLOWELL

BENCHES FOR SCHOOL SHOPS

In school shops from coast to coast the big swing is to Hallowell Benches. Here's why: No other benches come so close to being "student proof" . . . give such custom quality construction at such economical cost . . . offer such a variety in job engineered models. Built to outlast ordinary benches by many years, Hallowell Benches are the best investment your school can make. Learn about Hallowell's complete line of school shop equipment. Call your distributor or mail coupon today.

SOLDERING BENCH

Model 1090. Sturdy open base with heat-resistant Transite covered top. Sizes up to 72" x 29".

GLUE BENCH

Model 1018. All-steel with built-in racks and lower shelf for clamps and tools. Top is 60" x 24" x 35" high. (Available with stainless steel top.)

MACHINE & LAYOUT BENCH

Model 1030. Will mount brakes and roll formers needing 42 inches. Top sizes up to 96" long x 42" wide.

Send for **FREE** full-line catalog today.

COLUMBIA-HALLOWELL Division SPS
Jenkintown 75, Pa.
Please send me your catalog Form 2112.

NAME_____
Please Print
SCHOOL_____
ADDRESS_____
CITY_____ ZONE_____ STATE_____

COLUMBIA-HALLOWELL Division SPS JENKINTOWN 75, PA. • SPS WESTERN, SANTA ANA, CAL.

where reliability replaces probability

ECONOMICAL TEACHING AID

JOHNSON NO. 142

HEAT TREATING FURNACE

HEATS FAST, SAVES TIME

Start heat treating high speed and carbon steels while other furnaces warm up. Powerful burners in this efficient furnace get heat up to 1300°-2350° F. range in minutes. Gets the job done fast to save time and gas. Temperatures accurately and quickly regulated. Ratchet arrangement permits holding door in various positions.

High temperature refractory-lined firebox keeps heat uniform — 7" by 13" by 16¾". 200,000 BTU'S per hour. Carbofrax Hearth, 11" by 16"; G.E. Motor and Johnson Blower included.

No. 142 HEAT TREATING FURNACE

$374.00 *f.o.b. factory*

WRITE TODAY FOR FREE JOHNSON CATALOG

plus information on factory reconditioning your present Johnson furnace

JOHNSON GAS APPLIANCE COMPANY
504 E. AVENUE N.W., CEDAR RAPIDS, IOWA

johnson

If it burns gas look to Johnson

Since 1901

M. L. Campbell Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
Patterson Bros.

GLUES, CEMENTS

Borden Co.
Brodhead-Garrett Co.
Charles Bruning Co., Inc.
M. L. Campbell Co.
D. W. Cope Plastics
Craftsman Supply House
Craftsman Wood Service Co.
Fry Plastics International
Giles & Kendall Co.
Higgins Ink Co.
House of Plastics
Kit Kraft
J. C. Larson Co.
Modern School Supplies
Monite Waterproof Glue Co.
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
Sax Bros., Inc.
Tepping Studio Supply Co.
UHU Products Corp.
UNIC Drafting Eqpt. Co.
Wilhold Glues, Inc.

GOGGLES
(See Safety Glasses)

GRINDERS, CENTERLESS

Brodhead-Garrett Co.
Hammond Machinery Builders, Inc.

GRINDERS, PORTABLE ELECTRIC

Brodhead-Garrett Co.
Burstein-Applebee Co.
Chown Hardware Co.
D. W. Cope Plastics
Craftools, Inc.
Dremel Mfg. Co.
Foley Mfg. Co.
Millers Falls Co.
Patterson Bros.
Plastic Products Co.
Porter-Cable Machine Co.
Skil Corp.
Stanley Electric Tools
Sunbeam Equipment Corp.
UNIC Drafting Eqpt. Co.

GRINDERS, PRODUCTION, SURFACE

Brodhead-Garrett Co.
Chown Hardware Co.
Delta Power Tool Div.
Patterson Bros.

GRINDERS, TOOL
(See also Grinders, Portable; Grinders, Toolpost)

Alina Corp.
Atlas Press Co.
Baldor Electric Co.
Baldwin Industries, Inc.
Belsaw Machinery Co.
Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Clausing Div., Atlas Press
Delta Power Tool Div.
DeWalt, AMF.
Hammond Machinery Builders, Inc.
Mico Instrument Co.
Oliver Machinery Co.
Patterson Bros.
Powermatic Machine Co.
South Bend Lathe, Inc.
Stanley Tools
Stewart Clay Co., Inc.
U. S. Cutting Chain Mfg. Co.

GRINDERS, TOOLPOST

Brodhead-Garrett Co.
Patterson Bros.

GRINDING WHEELS

Baldor Electric Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Craftsman Wood Service Co.
Delta Power Tool Div.
Millers Falls Co.
Frank Mittermeier
Patterson Bros.
Skil Corp.
Stewart Clay Co., Inc.

GUARDS, CIRCULAR SAW

Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Delta Power Tool Div.
DeWalt, AMF.
General Scientific Eqpt. Co.
Huther Bros. Saw Mfg. Co.
Northfield Foundry & Mach. Co.
Patterson Bros.
Skil Corp.
Yates-American Machine Co.
Yuba Power Products, Inc.

GUARDS, WOODWORKING MACHINERY

Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Delta Power Tool Div.
DeWalt, AMF.
J. A. Fay & Egan Co.
General Scientific Eqpt. Co.
Greaves Mach. Tool Div.
Northfield Foundry & Mach. Co.
Patterson Bros.
Yates-American Machine Co.

HACKSAWS, HAND
(See also Hand Tools)

Brodhead-Garrett Co.
Chown Hardware Co.
Millers Falls Co.
Patterson Bros.
Proto Tool Co.
Rogers Supply House
Sax Bros. Inc.
Stanley Tools
L. S. Starrett Co.
X-acto, Inc.

HACKSAWS, POWER

Berkroy Products Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Millers Falls Co.
Patterson Bros.
Sales Service Mfg. Co.
Skil Corp.
L. S. Starrett Co.

HAMMERS, METALWORKING

Billings & Spencer Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftools, Inc.
Millers Falls Co.
Patterson Bros.
Peck, Stow & Wilcox Co.
Proto Tool Co.
Sax Brothers Co.
Skil Corp.
Stanley Tools
UNIC Drafting Eqpt. Co.
J. H. Williams & Co.

HAMMERS, WOODWORKING

Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service
Millers Falls Co.
Patterson Bros.
Rogers Supply House
Stanley Tools
X-acto, Inc.

HAND TOOLS, MACHINE SHOP
(See also Hand Tools, Mechanics)

Alina Corp.
Armstrong Brothers Tool Co.
Atmars Tool Co.
Billings & Spencer Co.
Brodhead-Garrett Co.
Burstein-Applebee Co.
Chown Hardware Co.
Cincinnati Tool Co.
Fairgate Rule Co.
Lufkin Rule Co.
Millers Falls Co.
Montgomery & Co., Inc.
Patterson Bros.
Peck, Stow & Wilcox Co.
Scherr-Tumico
Stanley Tools
L. S. Starrett Co.
Wetzler Clamp Co., Inc.
J. H. Williams & Co.
Wilton Tool Mfg. Co.

HAND TOOLS, MECHANICS

Armstrong Bros. Tool Co.
Atmars Tool Co.
Billings & Spencer Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Cincinnati Tool Co.
Albert Constantine & Son, Inc.
Diamond Tool & Horseshoe Co.
Duro Metal Products Co.
Fairgate Rule Co.
Millers Falls Co.
Patterson Bros.
Proto Tool Co.
Scherr-Tumico
Stanley Tools
L. S. Starrett Co.
Wetzler Clamp Co., Inc.
J. H. Williams & Co.
X-acto, Inc.

HAND TOOLS, WOODWORKING

Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardwart Co.
Cincinnati Tool Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service
Fairgate Rule Co.
Greenlee Tool Co.
Irwin Auger Bit Co.
Lussky, White & Coolidge, Inc.
Magna-Set Company
Millers Falls Co.
Miterite, Inc.
Frank Mittermeier
Patterson Bros.
Proto Tool Co.
Rogers Supply House
Sax Bros., Inc.
Stanley Tools
L. S. Starrett Co.
Versa Vise
Wetzler Clamp Co., Inc.
Wilton Tool Mfg. Co.
Woodcraft Supply Co.
X-acto, Inc.

HARDWARE SUPPLIES

Brodhead-Garrett Co.
Burstein-Applebee Co.
Chown Hardware Co.
Gearon Co.
Lussky, White & Coolidge, Inc.
Oliver & Long Dev. Co.
Patterson Bros.
Sharon Bolt & Screw Co.

HEATGUNS & BLOWERS

Master Appliance Corp.
Patterson Bros.

HOISTS, CRANES

Brodhead-Garrett Co.
Grand Specialties Co.
Montgomery & Co., Inc.
Skil Corp.

JEWELRY TOOLS, SUPPLIES

Bergen Arts & Crafts
Brodhead-Garrett Co.
Burstein-Applebee Co.
Craftools, Inc.
Dremel Mfg. Co.
House of Plastics
Immerman & Sons
Kit Kraft
Lamp-Shade Accessories
Patterson Bros.
Plastic Parts & Sales
Plastic Products Co.
Sax Bros., Inc.
Seeley's Ceramic Service
Tepping Studio Supply Co.
UNIC Drafting Eqpt. Co.

KITS, ARCHERY, FISHING TACKLE

Craftsman Wood Service Co.
Giles & Kendall Co.
Old Pioneer Archery
School Products Co.

KITS, BOATS

Giles & Kendall Co.
Plastic Products Co.

KITS, ELECTRICITY, ELECTRONICS, RADIO

Allied Radio Corp.
EICO (Electronic Inst. Co.)
Electronic Kits Supply Co.
Hawco Electronic & Res. Dev. Corp.
PACO Electronics Co., Inc.
Philco Tech. Rep. Div.
Science Electronics, Inc.
Science Instruction Kits

KITS, FOUNDRY & METALWORKING DEMONSTRATION

Cerro de Pasco Sales Corp.

KITS, UNFINISHED VISE

Wilton Tool Mfg. Co.

KITS, WATER SKIS, FOOT BINDINGS

Brodhead-Garrett Co.
Craftsman Wood Service Co.
Giles & Kendall Co.
H. E. D. Supplies
Hardwood Corp. of America
Western Woods Mfg. Co.

KITS, WOODWORKING PROJECTS

Bedford Lumber Co.
Brodhead-Garrett Co.
Craftsman Wood Service Co.
DonJer Products Co.
Giles & Kendall Co.
Geo. S. Thompson Corp.
Wilkenson Mfg. Co.
Wilton Tool Mfg. Co.

KNIVES, SLOYD, CRAFT

Brodhead-Garrett Co.
Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftools, Inc.
Gearon Co.
Millers Falls Co.
Patterson Bros.
Sax Brothers, Inc.
School Products Co.
Stanley Tools
UNIC Drafting Eqpt. Co.
X-acto, Inc.

LAMPS, BENCH, DESK, ETC.

Luxo Lamp. Corp.

LAMP PARTS

Brodhead-Garrett Co.
D. W. Cope Plastics
Craftsman Supply House
Craftsman Wood Service
Gearon Co.
Gyro Lamp & Shade Corp.
Lamp-Shade Accessories
Luxo Lamp. Corp.
Patterson Bros.
Plastic Parts & Sales
Rogers Supply House

LAPIDARY EQUIPMENT & SUPPLIES

Brodhead-Garrett Co.
Craftools, Inc.
Sax Bros., Inc.
Tepping Studio Supply Co.
UNIC Drafting Eqpt. Co.

LATHES, ENGINES

Alina Corp.
Atlas Press Co.
Chown Hardware Co.
Clausing Div., Atlas Press
Delta Power Tool Div.
Logan Engineering Co.
Patterson Bros.
Sheldon Machine Co.
South Bend Lathe, Inc.

LATHES, METALSPINNING

Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Delta Power Tool Div.

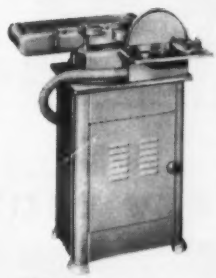
"Built-in Extras" make

DURO POWER TOOLS

the most desired line in schools everywhere!

Scroll Saws

Jointers


Sanders

Band Saws

Routers

Lathes

Drill Presses

Circular Saws

- **extra work areas**
- **extra capacities**
- **extra safety features**
- **extra ruggedness**

Progressive school administrators are equipping their vocational workshops with Duro Power Tools. The reasons for this preference are many and varied—but it can be boiled down to three simple words—"more for less"! You need just glance at a Duro unit to see the many extras you get at no extra cost! Here are just a few: *Circular Saws* have larger tables, greater depth of cut at 45° and 90°, added work space . . . PLUS . . . *Drill Presses* with more capacity and stroke feed, a built-in light and switch . . . PLUS . . . *Lathes* offer 2" greater swing over bed, handwheels for tail stock and tool rest holder . . . PLUS . . . *Band Saws*, too, have 2" more capacity under foot, 104" blade, table extensions and light attachment . . . PLUS! . . . *Belt and Disc Sanders* with miter gauge included, quick belt release, extra large platen size . . . PLUS . . .

These extras are only a few of the many found on the entire Duro line . . . extras not found on other nationally advertised power tools.

There are many other advantages in owning Duro too—you get advanced design, lifetime ruggedness, precision accuracy, high operating efficiency and practically no maintenance cost. If you're looking for value and utility in power tools, choose DURO—it's your best bet!

GET THIS FREE CATALOG

Write today for your copy of the big Duro catalog showing the complete line of Duro circular saws, drill presses, band saws, lathes, scroll saws, sanders, routers, shapers and a full line of accessories. You'll get a closer look at the many "built-in" extras that make this line "second to none."

DURO Metal Products Co.

2691 N. KILDARE AVENUE • CHICAGO 39, ILLINOIS

Oliver Machinery Co.
Patterson Bros.
Powermatic Machine Co.

LATHES, TURRET (Includes Screw Machines)

Alina Corp.
Atlas Press Co.
Challenge Machinery Co.
Clausing Div., Atlas Press
Delta Power Tool Div.
Greenlee Tool Co.
Logan Engineering Co.
Sheldon Machine Co.
South Bend Lathe, Inc.

LATHES, WOODWORKING

Atlas Press Co.
Boice-Crane Co.
Bowlathe Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Delta Power Tool Div.
DeWalt, AMF.
Duro Metal Products Co.
Gizco
Millers Falls Co.
Oliver Machinery Corp.
Patterson Bros.
Powermatic Machine Co.
Yates-American Machine Co.
Yuba Power Products, Inc.

LAWNMOWER SHARPENERS & SERVICING EQUIPMENT

Fate-Root-Heath Co.
Foley Mfg. Co.

LEATHERCRAFT, TOOLS AND SUPPLIES

Brodhead-Garrett Co.
Craftsman Supply House
Kit Kraft
J. C. Larson Co.
Patterson Bros.
Sax Brothers, Inc.
UNIC Drafting Eqpt. Co.
X-acto, Inc.

LEGS, WORKBENCH AND TABLE

Brodhead-Garrett Co.
Giles & Kendall Co.
Lussky, White & Coolidge, Inc.
Parent Metal Products, Inc.
Patterson Bros.
Standard Pressed Steel Co.
Tepping Studio Supply Co.
Tolerton Co.
UNIC Drafting Eqpt. Co.
Wilkenson Mfg. Co.

LEVELS

Berger Scientific Supplies
Brodhead-Garrett Co.
Charles Bruning Co., Inc.
Chown Hardware Co.
Columbian Vise & Mfg. Co.
Albert Constantine & Son, Inc.
Fairgate Rule Co.
Keuffel & Esser Co.
Lufkin Rule Co.
Millers Falls Co.
Patterson Bros.
Stanley Tools
L. S. Starrett Co.

LUBRICANTS, LATHE CENTER

Chicago Mfg. & Dist. Co.

LUMBER

Brodhead-Garrett Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
T. A. Foley Lumber Co.
Giles & Kendall Co.
Hardwood Corp. of America
Kindt-Collins Co.

MACHINE SHOP EQPT.

Alina Corp.
Airborne Sales Co.
Armstrong Bros. Tool Co.
Benchmaster Mfg. Co.
Berkroy Products, Inc.
Boice-Crane Co.
Brodhead-Garrett Co.
Casting Specialties Co.
Challenge Machinery Co.
Chicago Tool & Eng. Co.
Chown Hardware Co.
Delta Power Tool Div.
DeWalt, AMF.
DonJer Products Co.
Garrett Tubular Prods. Co.
Hammond Machinery Builders, Inc.
Charles A. Hones, Inc.
Logan Engineering Co.
Lufkin Rule Co.
Mico Instrument Co.
Montgomery & Co., Inc.
Morgan Vise Co.
Parent Metal Prods., Inc.
Patterson Bros.
Powermatic Machine Co.
Scherr-Tumico
Sheldon Machine Co.
South Bend Lathe, Inc.
Stanley Tools
Tolerton Co.
Universal Vise & Tool Co.
J. H. Williams & Co.
Wilton Tool Mfg. Co.

MACHINE SHOP SUPPLIES

Alina Corp.
Billings & Spencer Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Logan Engineering Co.
Montgomery & Co., Inc.
Patterson Bros.
Wilton Tool Mfg. Co.

MACHINE TOOL ATTACHMENTS

Alina Corp.
Atlas Press Co.
Benchmaster Mfg. Co.
Brodhead-Garrett Co.
Chicago Tool & Eng. Co.
DeWalt AMF.
Logan Engineering Co.
Mico Instrument Co.
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
Sheldon Machine Co.
South Bend Lathe, Inc.
Universal Vise & Tool Co.
J. H. Williams & Co.

MACHINE TOOLS, WOOD AND METAL
(See machine wanted)

MEASURING TOOLS, PRECISION
(See also tool wanted)

Alina Corp.
Brodhead-Garrett Co.
Chown Hardware Co.
Fairgate Rule Co.
Lufkin Rule Co.
Millers Falls Co.
Frank Mittermeier
Modern School Supplies
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
L. S. Starrett Co.

MECHANICAL DRAWING
(See Drafting)

MELTING POTS

Brodhead-Garrett Co.
General Scientifc Eqpt. Co.
Charles A. Hones, Inc.
Johnson Gas Appliance Co.
Montgomery & Co., Inc.
Patterson Bros.
Sunbeam Equipment Corp.
Western Materials Co.

MELTING POTS, PRINTERS

Nolan Corp.

METALS

Brodhead-Garrett Co.
Cerro de Pasco Sales Corp.
Craft Metals Corp.
Craftsman Supply House
DonJer Products Co.
Kit Kraft
Metal Supply, Inc.
Patterson Bros.
Reynolds Metals
St. Louis Crafts, Inc.
Sax Bros., Inc.
Western Materials Co.

METALWORKING EQUIPMENT

Air Reduction Sales Co.
Alina Corp.
American Pullmax Co.
Benchmaster Mfg. Co.
Berkroy Products Co.
Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Dake Corp.
Delta Power Tool Div.
DonJer Products Co.
Electric Hotpack Co.
Greenlee Tool Co.
Hammond Machinery Builders, Inc.
Lake Erie Machinery Corp.
Lennox Tool and Machine Builders
Logan Engineering Co.
Master Specialty Co.
Montgomery & Co., Inc.
Northfield Foundry & Machine Co.
O'Neil-Irwin Mfg. Co.
Parent Metal Products, Inc.
Patterson Bros.
Peck, Stow & Wilcox Co.
Powermatic Machine Co.
Sax Bros., Inc.
Sheldon Machine Co., Inc.
Swayne, Robinson & Co.
Universal Vise & Tool Co.
Western Materials Co.

METALWORKING SUPPLIES

Air Reduction Sales Co.
Aluminum Co. of America
Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Craft Metals Corp.
DonJer Products Co.
J. C. Larson Co.
Magnaflux Corp.
Montgomery & Co., Inc.
Oliver & Long Dev. Co.
Patterson Bros.
Reynolds Metals Co.
Rickenbacker Mfg. Co.
Sax Brothers, Inc.
Southern Screw Co.
Western Materials Co.

MICROMETER CALIPERS

Alina Corp.
Brodhead-Garrett Co.
Chown Hardware Co.
Lufkin Rule Co.
Millers Falls Co.
Frank Mittermeier
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
L. S. Starrett Co.
UNIC Drafting Eqpt. Co.

MIDGET MILLS

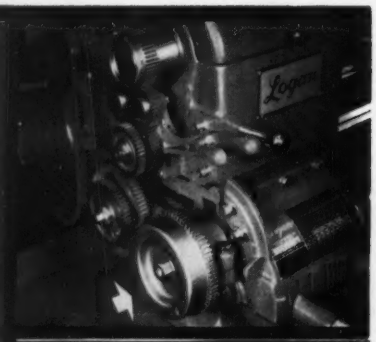
Alina Corp.
Benchmaster Mfg. Co.

MILLING MACHINES

Alina Corp.
Atlas Press Co.
Benchmaster Mfg. Co.
Brodhead-Garrett Co.
Chown Hardware Co.
J. A. Fay & Egan Co.
Greaves Machine Tool Co.
Robert E. Morris Co.

new safety feature!

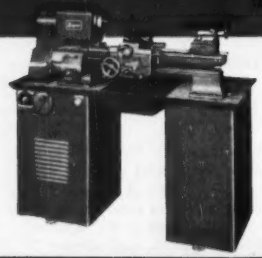
Logan



Automatic Safety Gear now standard equipment on 10" and 11" models

12" Lathe

12" swing, 11" collet, 1⅜" bore (shown)



All Logan 11", 12" and 14" lathes, as well as models 1825 and 1875 (*shown*) 10" lathes, now offer positive overload protection without additional cost. Exclusive Automatic Safety Gear absorbs shock of sudden overloads when threading, preventing gear damage from spindle to gear box. Also protects all gears in gear box up to 52 threads per inch. The combination of this Safety Gear and spring-loaded lever-operated clutch in apron gives the same protection for corresponding feeds. Can be factory-installed on other models of new 10" and 9" quick-change lathes. Available for present Logan quick-change lathes: $10 for 9", 10" and 11" sizes, $15 for 12" and 14".

10" Lathe

Model 1875
10" swing, 1½" collet, 25/32" bore

For full model details and evidence of Logan's *low upkeep* and *better service*, see your Logan dealer, or write for catalog.

LOGAN ENGINEERING CO., Dept. E-460, 4901 Lawrence Ave., Chicago 30, Ill.

TOOLS FOR CRAFTSMEN

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TEACHING AIDS

to help make your job easier...

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2
GREENLEE
TIPS ON SHARPENING AND MAINTAINING BITS, CHISELS AND TURNING TOOLS
How to use and care for your Hollow Chisels and Bits

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No. 470-6 SET OF SIX TURNING TOOLS Also available as set of 8

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No. 22 SOLID-CENTER AUGER BIT

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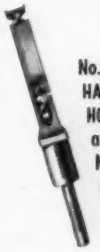
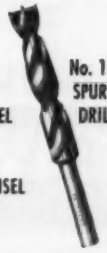


No. 101-H HARD-WEAR HOLLOW CHISEL and No. 120-B HOLLOW CHISEL BIT



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Floquil Prods. Inc.
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Burstein-Applebee Co.
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Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftools, Inc.
Patterson Bros.
Tepping Studio Supply Co.

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(See Drafting Supplies)

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Charles Bruning Co., Inc.
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Craftsman Supply House
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Cobb Shinn

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Oliver Machinery Co.
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House of Plastics
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Patterson Bros.
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School Products Co.
UNIC Drafting Eqpt. Co.

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Sax Bros. Inc.
UNIC Drafting Eqpt. Co.

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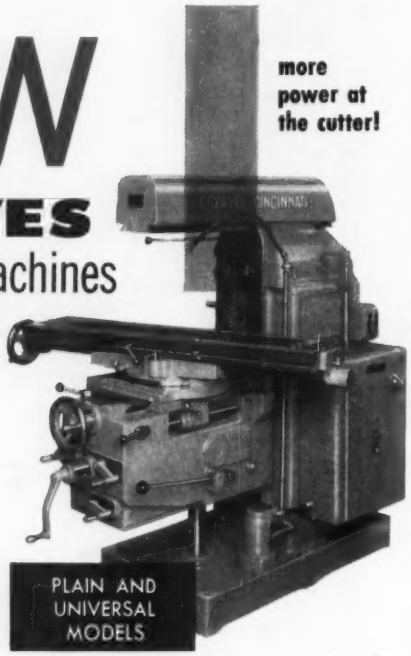
American Type Founders

new GREAVES 2-XH Milling Machines

more power at the cutter!



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The completely new GREAVES No. 2-XH Milling Machine brings added versatility, increased operational ease, and more power where it's needed most . . . *at the cutter!*

It utilizes two motors, one for spindle drive; a separate motor for moving table, saddle and knee. Compare this and the other outstanding features of the new Greaves Mill. You'll see why Greaves is "The MOST Mill for the LEAST Money."

- Wide range of speed/feed combinations for any type material, any type job.
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- Large, heavy-duty knee, saddle and table provide accuracy for all types of milling.
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- New rapid traverse lever within operating control area.
- Separate drive motor for table, saddle and knee provides more smooth balanced power at the cutter.

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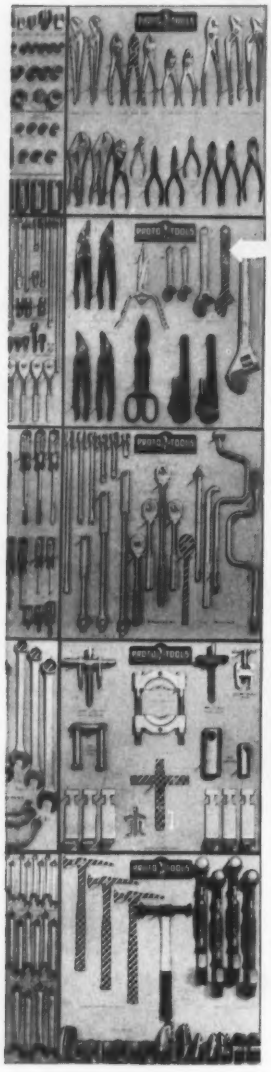

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Delta Power Tool Div.
DeWalt, AMF.
Duro Metal Products Co.
Huther Bros. Saw Mfg. Co.
Millers Falls Co.
Patterson Bros.
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Plastic Products Co.
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American Type Founders
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Parks Woodworking Machine Co.
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Millers Falls Co.
Patterson Bros.
Proto Tool Co.
Rogers Supply House
Stanley Tools
L. S. Starrett Co.
J. H. Williams & Co.
X-acto, Inc.

SCREWDRIVERS, PORTABLE ELECTRIC

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Chown Hardware Co.
Millers Falls Co.
Patterson Bros.
Skil Corp.
Stanley Electric Tools
Supreme Products Corp.

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(See Lathes, Turret)

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Greaves Mach. Tool Div.
Greenlee Bros. & Co.
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Oliver Machinery Co.
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Stanley Electric Tools
Stanley Tools

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J. C. Larson & Co., Inc.

SHELVING, STEEL

Brodhead-Garrett Co.
Chown Hardware Co.
Fairgate Rule Co., Inc.
Parent Metal Products Inc.
Patterson Bros.
E. H. Sheldon Eqpt. Co.
Standard Pressed Steel Co.
UNIC Drafting Eqpt. Co.

SHOP COATS, APRONS

Alvin & Co., Inc.
American Wood Type Mfg. Co.
Brodhead-Garrett Co.
Can-Pro Corp.
Craftsman Wood Service Co.
General Scientific Eqpt. Co.
Modern School Supplies
Patterson Bros.
School Products Co.
Western Materials Co.

SHOP FURNITURE

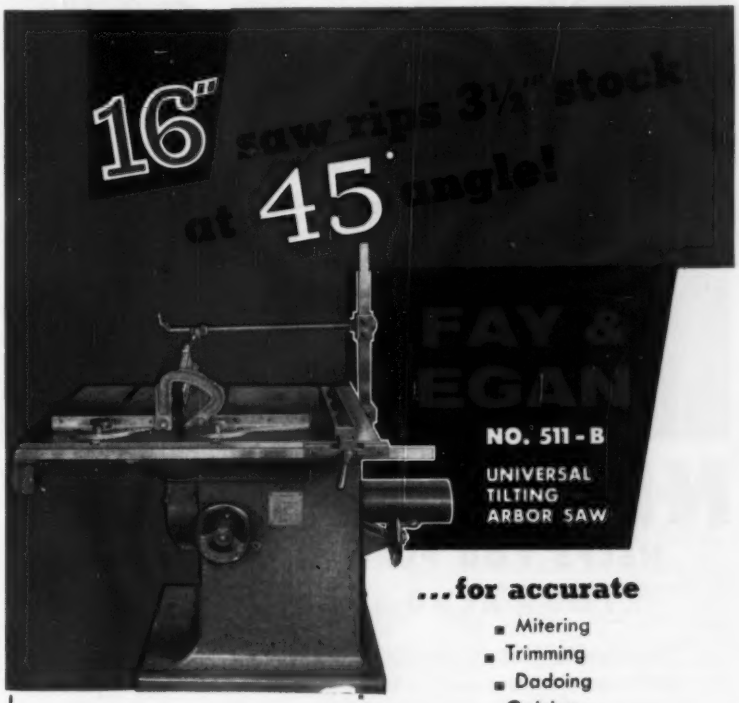
Ajusto Eqpt. Co.
Brodhead-Garrett Co.
Chown Hardware Co.
Garrett Tubular Prods., Inc.
Modern School Supplies
Parent Metal Prods., Inc.
Patterson Bros.
E. H. Sheldon Eqpt. Co.
Stacor Equipment Co.
Standard Pressed Steel Co.
Tolerton Co.
UNIC Drafting Eqpt. Co.

SILK SCREEN MATERIALS

American Type Founders
Brodhead-Garrett Co.
DonJer Products Co.
Floquil Prods. Inc.
Leeds Sweete Products, Inc.
G. A. Pratt Co.
Sax Bros. Inc.
UNIC Drafting Eqpt. Co.

SLIDE RULES

Alvin & Co., Inc.
Brodhead-Garrett Co.
Chas. Bruning Co.
C-Thru Ruler Co.
Keuffel & Esser Co.
Patterson Bros.
Frederick Post Co.
Radio Shack Corp.
School Products Co.
UNIC Drafting Eqpt. Co.



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- and allied operation

- RUGGED CONSTRUCTION
- FABRICATED STEEL FRAME
- VIBRATION-FREE OPERATION
- BUILT-IN DUST CHUTE
- HEAVY DUTY 5 HP DIRECT MOUNTED MOTOR

CUTS OFF stock 1" thick, 18" wide
RIPS 24" wide to right, 18" to left
RIPS AT 45° ANGLE: full 3½" thick with 16" saw—5" thick with 18" saw
DADO HEADS to 2" wide used on standard arbor

Write today for bulletin showing complete specifications

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Patterson Bros.
Peck, Stow & Wilcox Co.
Proto Tool Co.
Sax Bros., Inc.
Stanley Tools
Tepping Studio Supply Co.
UNIC Drafting Eqpt. Co.

SOLDERING EQUIPMENT
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American Electrical Heater Co.
Brodhead-Garrett Co.
Burstein-Applebee Co.
Chown Hardware Co.
Charles A. Hones, Inc.
Johnson Gas Appliance Co.
Marquette Mfg. Co., Inc.
Patterson Bros.
Rogers Supply House
Sax Brothers, Inc.
Stanley Tools

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Burstein-Applebee Co.
Cerro de Pasco Sales Corp.
Chown Hardware
Johnson Gas Appliance Co.
Marquette Mfg. Co., Inc.
Mico Instrument Co.
Patterson Bros.
Rogers Supply House
Sax Brothers, Inc.
Tepping Studio Supply Co.

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C-Thru Rule Co.
Fairgate Rule Co.
Lufkin Rule Co.
Millers Falls Co.
Montgomery & Co., Inc.
Patterson Bros.
Scherr-Tumico
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Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
Fairgate Rule Co.
T. A. Foley Lumber Co.
Giles & Kendall Co.
Millers Falls Co.
Patterson Bros.
Stanley Tools
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Burstein-Applebee Co.
Chown Hardware Co.
Evans Rule Co.
Keuffel & Esser
Lufkin Rule Co.
Millers Falls Co.
Modern School Supplies
Patterson Bros.
Rogers Supply House
Stanley Tools
L. S. Starrett Co.

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Burstein-Applebee Co.
Chown Hardware Co.
Modern School Supplies
Patterson Bros.

TELEPHONE EQUIPMENT
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Brodhead-Garrett Co.
Burstein-Applebee Co.
DonJer Products Co.
Electronic Instrument Co.
General Scientific Eqpt. Co.
Heath Co.
Lufkin Rule Co.
Magnaflux Corp.
Mico Instrument Co.
PACO Electronics Co.
Patterson Bros.
Radio Shack Corp.
Rogers Supply House
Sprague Prods. Co.
Teaching Aids, Inc.

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Maxwell Industries, Inc.
Montgomery & Co., Inc.
Patterson Bros.
Powermatic Machine Co.
South Bend Lathe, Inc.
J. H. Williams & Co.

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Chown Hardware Co.
Craftsman Wood Service Co.
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Patterson Bros.
Plastic Products Co.
Sax Bros., Inc.
UNIC Drafting Eqpt. Co.
X-acto, Inc.

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Grand Specialties Co.

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Proto Tool Co.
Rogers Supply House
J. H. Williams & Co.

TWEEZERS, FORCEPS
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General Scientific Eqpt. Co.
Patterson Bros.
X-acto, Inc.

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Buffalo Teachers College
Univ. of Minnesota
New Mexico Western College
New York Univ.
Oregon State College
Oswego Teachers College
Penn. State Univ.
Stout State College
Wayne State Univ.

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Craftsman Wood Service
Fry Plastics International
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Ohio Blow Pipe Co.
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VISES, MACHINE SHOP
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Benchmaster Mfg. Co.
Brodhead-Garrett Co.
Chicago Tool & Eng. Co.
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Columbian Vise & Mfg. Co.
Desmond-Stephan Mfg. Co.
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Swayne, Robinson & Co.
Tepping Studio Supply Co.
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Universal Vise & Tool Co.
Versa-Vise
Wilton Tool Mfg. Co.

VISES, WOODWORKING
Abernathy Vises & Tool Co.
Brodhead-Garrett Co.
Burstein-Applebee Co.
Chicago Tool & Eng. Co.
Chown Hardware Co.
Columbian Vise & Mfg. Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service
Desmond-Stephan Mfg. Co.
DeWalt, AMF.
Millers Falls Co.
Milwaukee Tool & Eqpt. Co.
Morgan Vise Co.
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Parent Metal Products, Inc.
Patterson Bros.
E. H. Sheldon Eqpt. Co.
Stanley Tools
Tolerton Co.
Versa-Vise
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Dockson Corp.
General Scientific Eqpt. Co.
Gizco
Marquette Mfg. Co., Inc.
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Rogers Supply House
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Brodhead-Garrett Co.
Chicago Tool & Eng. Co.
Dockson Corp.
General Scientific Eqpt. Co.
Marquette Mfg. Co., Inc.
Parent Metal Products, Inc.
Patterson Bros.
Tolerton Co.

WOODSHOP SUPPLIES
(See also item wanted)
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Brodhead-Garrett Co.
M. L. Campbell Co.
Chown Hardware Co.
Albert Constantine & Son, Inc.
Craftsman Wood Service Co.
DonJer Products Co.
"Dowl-It" Co.
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Giles & Kendall Co.
Lussky, White & Coolidge, Inc.
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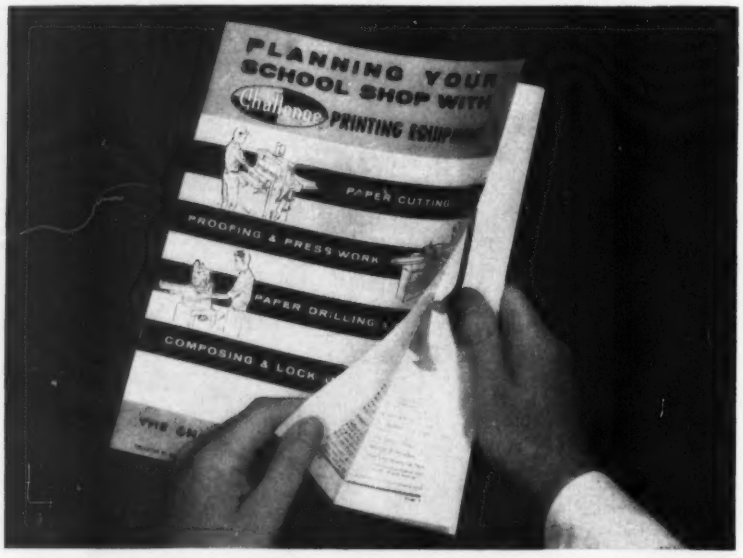
Patterson Bros.
Southern Screw Co.
UNIC Drafting Eqpt. Co.
Upholstery Supply Co.
U. S. Cutting Chain Mfg. Co.
Wetzler Clamp Co., Inc.
X-acto, Inc.
Yates-American Machine Co.

WOODWORKING EQUIPMENT
(See also item wanted)
Belsaw Machinery Co.
Boice-Crane Co.
Brodhead-Garrett Co.
Chown Hardware Co.



NEW BOOKLET

HELPS YOU PLAN AND IMPROVE YOUR SCHOOL PRINT SHOP

Here is a helpful aid to school supervisors, shop instructors, and others interested in planning new graphic arts departments or expanding present facilities.

This booklet provides a useful guide to the selection of the most practical paper cutting, proofing, paper drilling or punching, composition and lock-up equipment, and supplies for school print shop needs. Mail coupon for your free copy of this booklet.

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Please send me a copy of the new Challenge Booklet entitled "Planning Your School Shop."

Name_____ Position_____

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SOFT VINYL COVER GOGGLES

For heavy impact, 100% protection. Large, comfortable frame fits over any prescription glasses yet form-fits contours of face and nose. Acrylic *Impax* lens exceeds specifications for heavy impact. Exclusive lens-lock makes it easy to replace lenses; frames last indefinitely. Optional ventilation keeps goggles fog-free.

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Lightweight, comfortable protection against 90% of eye hazards. Exclusive *Retrax* temples — earpieces telescope in and out for perfect, comfortable fit. *Universal* nosepiece allows student to adjust frame to fit his face exactly. Optically correct, shatterproof Methacrylate lenses snap in and out for easy replacement. Interchangeable lenses have side and bottom protection for even greater flexibility and economy. Choice of 5 lens colors.

AS IMPORTANT AS THE SKILLS YOU TEACH!

COMFORTABLE WELDING GOGGLES

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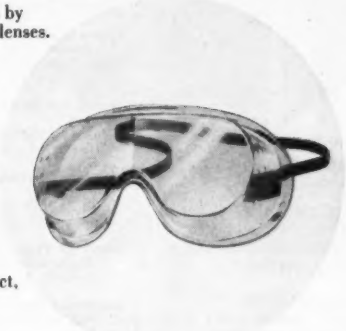
AIR SPEC SAFETY SPECTACLES

All-plastic durable frame with acrylic lenses replaceable without use of tools. Total weight less than an ounce. Low-cost protection for visitors—fit over most prescription frames.

INEXPENSIVE ONE-PIECE ACETATE GOGGLES

Lowest cost protection for incidental use and for shop visitors. Quality one-piece acetate goggles, optically correct, with full, all around vision.



NEW! LOW COST FILTER RESPIRATOR MORE EFFICIENT, MORE COMFORTABLE

Respiratory protection is important, too — against pneumoconiosis-producing dusts, nuisance dusts, toxic dusts not significantly more toxic than lead, nuisance mists, fumes formed by vapor condensation. *Resp-R-Aid's* remarkable urethane foam filter is so soft and pliable its edges literally caress the natural contours of *any* face. *The entire mask is a filter.* More than 25 square inches of microporous urethane — up to 8 times the filtering area of most masks. Thousands of inter-connected cells trap foreign particles but let air pass freely. Yet *Resp-R-Aid* weighs hardly more than one ounce. *Resp-R-Aid* costs only $1.95. Order now, or ask for more information.

A healthy respect for eye hazards . . . an appreciation of safety standards . . . these are *essentials* you can instill in students in their formative years. Just as they'll never lose the skills you taught them, they'll observe safety rules and encourage others to, also. American industry will thank you for *two* jobs well done!

Watchemoket can help you. In our *Eye-Savers* line you'll find the right eye protective equipment for every hazard . . . at favorable prices that will help you at budget-time. What's more, Watchemoket safety products are designed to simplify fitting problems: because of exclusive features most models fit *any* face. And Watchemoket safety glasses are deliberately designed with comfort in mind.

Important, too — you can sterilize Watchemoket safety products and pass them on from class to class.

Send for catalog describing *full* line and special school price list. Watchemoket Optical Company, 232 West Exchange St., Providence 3, Rhode Island.

WATCHEMOKET

Eye and Respiratory Protective Equipment

WATCHEMOKET eye SAVERS

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J. A. Fay & Egan Co.
Greaves Machine Tool Div.
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Magna-Set Co.
Millers Falls Co.
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Parent Metal Products, Inc.
Parks Woodworking Machine Co.
Patterson Brothers
Powermatic Machine Co.
Stacor Equipment Co.
Stanley Tools
Tolerton Co.
U. S. Cutting Chain Mfg. Co.
Wetzler Clamp Co., Inc.
Wilton Tool Mfg. Co.
Yates-American Machine Co.
Yuba Power Products, Inc.

WOODWORKING KITS, PROJECTS
(See Kits, Woodworking)

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Billings & Spencer Co.
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Burstein-Applebee Co.
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Diamond Tool and Horseshoe Co.
Duro Metal Products Co.
Millers Falls Co.
Patterson Bros.
Peck, Stow & Wilcox Co.
Proto Tool Co.
Rogers Supply House
J. H. Williams & Co.

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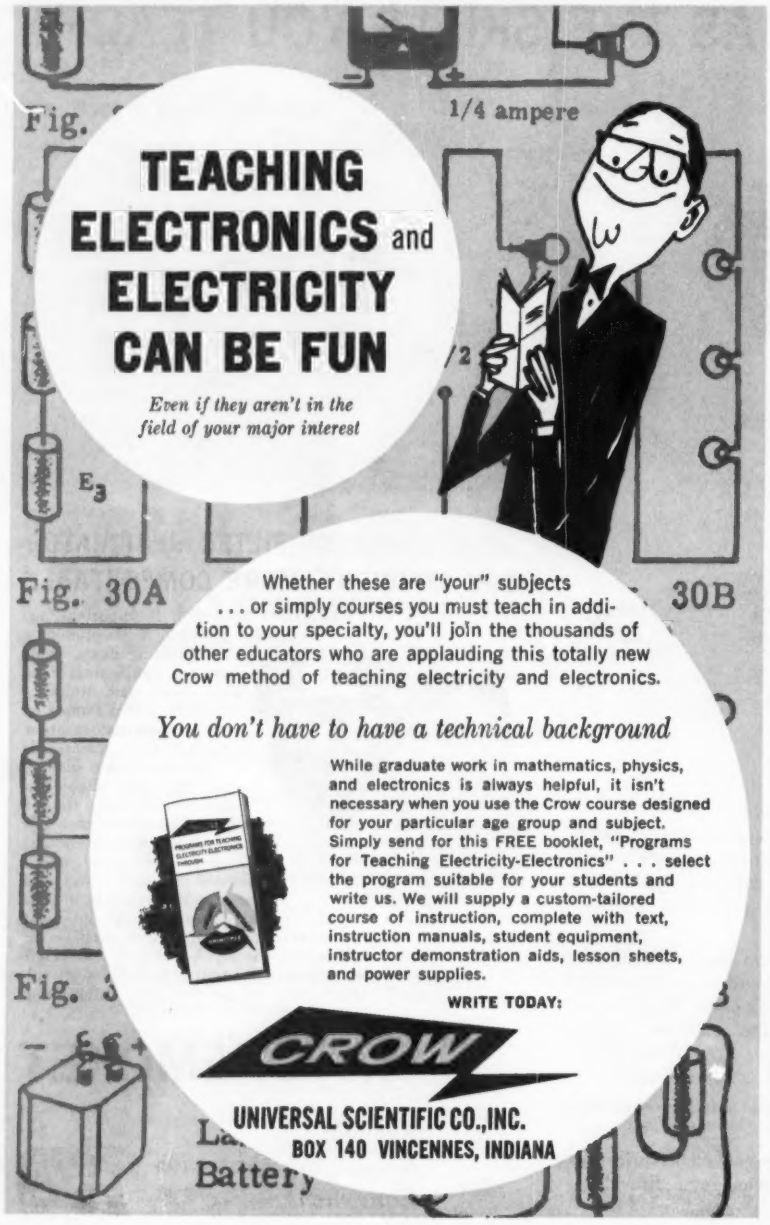
Brodhead-Garrett Co.
Duro Metal Products Co.
Patterson Bros.
Proto Tool Co.
P. A. Sturtevant
J. H. Williams & Co.

Use This Handy Directory

When planning your shop purchases refer to the classified list of suppliers starting on page 48. The addresses of all firms listed in the Suppliers Directory start in the next column.



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Even if they aren't in the field of your major interest

Whether these are "your" subjects ... or simply courses you must teach in addition to your specialty, you'll join the thousands of other educators who are applauding this totally new Crow method of teaching electricity and electronics.

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While graduate work in mathematics, physics, and electronics is always helpful, it isn't necessary when you use the Crow course designed for your particular age group and subject. Simply send for this FREE booklet, "Programs for Teaching Electricity-Electronics" . . . select the program suitable for your students and write us. We will supply a custom-tailored course of instruction, complete with text, instruction manuals, student equipment, instructor demonstration aids, lesson sheets, and power supplies.

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Adjustable Clamp Co.
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Chicago 22, Ill.

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Culver City, Calif.

Air Reduction Sales Co., Div. Air Reduction Co. Inc.
150 E. 42nd St.
New York 17, N. Y.

Ajusto Eqpt. Co.
515 Conneaut St.
Bowling Green, Ohio

Alina Corp.
122 E. Second St.
Mineola, L. I., N. Y.

Allied Radio Corp.
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Chicago 80, Ill.

Allyn and Bacon, Inc.
150 Tremont St.
Boston 11, Mass.

Aluminum Co. of America
1501 Alcoa Bldg.
Pittsburgh 19, Pa.

Alvin & Company, Inc.
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Windsor, Conn.

American Abrasive Metals Co.
460 Coit St.
Irvington 11, N. J.

American Air Filter Co., Inc.
215 Central Ave.
Louisville 8, Ky.

American Elec. Heater Co.
6110 Cass Ave.
Detroit 2, Mich.

American Machine & Foundry Co.
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New York 16, N. Y.

American Pullmax Co. Inc.
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Chicago 14, Ill.

American Technical Society
848 E. 58th St.
Chicago 37, Ill.

American Type Founders
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Elizabeth, N. J.

Armstrong Bros. Tool Co.
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Chicago 46, Ill.

Atlas Press Co.
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Kalamazoo, Mich.

Atmars Tool Co.
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Oakland 10, Calif.

Baldor Electric Co.
4351-67 Duncan Ave.
St. Louis 10, Mo.

Baldwin Industries, Inc.
975 West First St.
Azusa, Calif.

Barrett Equipment Co.
2101 Cass Ave.
St. Louis, Mo.

Bedford Lumber Co.
P.O. Box 65
Shelbyville, Tenn.

Beisaw Machinery Co.
315 Westport Road
Kansas City 11, Mo.

Benchmaster Mfg. Co.
1835 W. Rosecrans
Gardena, Calif.

Chas. A. Bennett Co., Inc.
237 N. Monroe St.
Peoria, Ill.

Bergen Arts & Crafts
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Miami, Fla.

Berger Scientific Supplies, Inc.
41 William St.
Boston 19, Mass.

Berkroy Products Co.
1171 E. 32nd St.
Los Angeles 11, Calif.

Charles Beseler Co.
219 S. 18th St.
East Orange, N. J.

Better Light Better Sight Bureau
420 Lexington Ave.
New York 17, N. Y.

Beverly Manufacturing Co.
9118 S. Main St.
Los Angeles 3, Calif.

Billings & Spencer Co.
1 Laurel St.
Hartford 1, Conn.

Binks Mfg. Co.
3126-32 Carroll Ave.
Chicago 12, Ill.

Bobbs-Merrill Co. Assoc. of Howard W. Sams & Co.
1720 E. 38th St.
Indianapolis 6, Ind.

Boice-Crane Co.
930 W. Central Ave.
Toledo 6, Ohio

Borden Chemical Co.—A Div. of the Borden Co.
350 Madison Ave.
New York 17, N. Y.

The Bowlathe Company
573 Dover Road
Westwood, Mass.

Brodhead-Garrett Co.
4560 E. 71st St.
Cleveland 5, Ohio

Charles Bruning Co., Inc.
1800 W. Central Rd.
Mt. Prospect, Ill.

Buck Engineering Co.
41 Marcy St.
Freehold, N. J.

College of Education at Buffalo
State Univ. of N. Y.
Buffalo 22, N. Y.

Burstein-Applebee Co.
1012-14 McGee St.
Kansas City 6, Mo.

M. L. Campbell Co.
2909 Chrysler Rd.
Kansas City 15, Kans.

Can-Pro Corp.
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Fond du Lac, Wis.

Casting Specialties Co.
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Cerro de Pasco Sales Corp.
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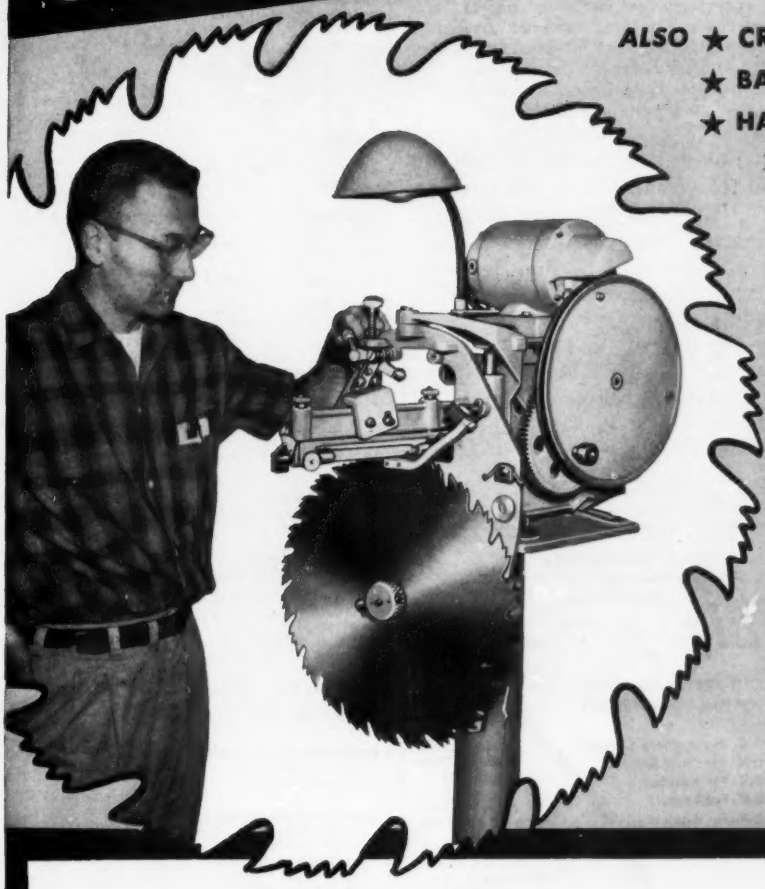
Here's the FIRST and ONLY Machine that Automatically Files and Joints

COMBINATION RIP AND CROSSCUT SAWS

ALSO ★ CROSSCUT CIRCULAR SAWS
★ BAND SAWS
★ HAND SAWS



It's the new Model 200 FOLEY Automatic SAW FILER

THE NEW model 200 Foley Automatic Saw Filer is the *first* and *only* machine which will file the so-called "combination" (rip and crosscut) circular saws; also crosscut circular saws, band saws, all types of hand saws.

The Foley Saw Filer is doubly valuable in manual training departments—it keeps all your saws in perfect cutting condition at low cost and greatly prolongs their life; it also is a great asset for training students in the correct care and maintenance of both hand and power saws. With the Foley Saw Filer, the Foley Retoother (for hand saws) and Foley Power Setter, (last two not shown) you can sharpen *4 to 6 hand saws per hour.*

The exclusive Foley principle of jointing the saw as it is filed, keeps all teeth uniform in size, shape and spacing; it also keeps circular saws perfectly round. This assures a fast, smooth, true cutting saw that stays sharp longer, runs cooler, and frequently doubles the life of the saw.

30-DAY TRIAL OFFER

You may try the new Model 200 Foley Saw Filer in your own shop for 30 days. See for yourself its precision work, advanced design and quality construction—time-proved through more than 50 years manufacture and use of previous models. Write for literature and details of 30-day trial offer.

FOLEY MANUFACTURING COMPANY
3316 N. E. 5th St., Minneapolis 18, Minn.

school shop case history:

ONE TORIT CYCLONE DUST COLLECTOR CLEANS 3 WOODWORKING MACHINES

Fred A. Koertge, Industrial Arts Instructor, Refugio High School, Refugio, Texas, says: "The Torit Dust Collector is very efficient, not noisy, and is very clean. The three machines serviced are a 20" planer, 20" band saw, and 10" jointer. There are gates in the pipeline at each machine and they can be opened or closed separately."

Check other school shop instructors—check health officials and maintenance experts: they'll all tell you that dust and air-borne debris are a very real menace. The answer is low cost, high efficiency Torit Dust Collectors, in either cyclone or cabinet models. They install *anywhere*—and they belong *everywhere* dust is a problem.

Write: Educational Department

TORIT

MANUFACTURING COMPANY
1133 Rankin St.,
St. Paul 16, Minn., DPT. 1416

AJUSTRITE CHAIRS AND STOOLS

SPLIT SECOND ADJUSTMENT — JUST LIFT SEAT TO DESIRED HEIGHT

Model S-1827

LABORATORY AND SHOP STOOLS

- Adjusts to fit any student
- No soiled hands when adjusting seat

Model S-1827 has 13" diameter steel seat. Seat adjusts from 18" to 27". Steel glides.

Model RSS-2230 has 16" diam. tubular steel footring welded to base. 13" diam. steel seat adjusts from 22" to 30". Casters, backrest, wood seat, seat pad or cushion available for both models.

FREE TRIAL Use an AJUSTRITE chair or stool for 30 days without obligation. Prove to yourself the many advantages AJUSTRITE offers in comfort, utility and economy. Write today—we'll do the rest.

Model RSS-2230

10 YEAR GUARANTEE

32 Models for Factories • Schools • Laboratories • Hospitals • Offices

AJUSTO EQUIPMENT CO.
515 CONNEAUT ST. • BOWLING GREEN, OHIO

THE SABER-JET **BOW** KIT

Made of Toughest Aircraft Aluminum (75 St.)

Big **POWERFUL**
56" Long
25 to 35 Pound PULL!

OUT PERFORMS MUCH HIGHER PRICED BOWS!

- **O.K. For Archery Classes!**
- **O.K. For Craft Classes!**
- **O.K. For Hunting**
- **O.K. For Target!**
- **O.K. For Adults!**
- **O.K. For Girls!**
- **O.K. For Boys!**

Suggested Retail Price $5.50 per kit

Kit consists of: 2 long sections, 2 handles and 4 aluminum rivets. All parts are rough formed, drilled and contoured, requiring only instructions in filing and polishing rough edges before assembly. String included.

Bow kit is composed of the same tough (aircraft quality) light weight aluminum (75 ST.) as our $7.95 bow, and when completed will have the same powerful pull (25 to 35 pounds).

Working with aluminum is comparatively easy, however, the construction of this bow will test the imagination and ingenuity of boys and girls from the 6th through the 12th grades.

Kits for school shop projects in lots of 12 or more:
50% Off
Suggested retail price f.o.b. Los Angeles

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Chicago, Ill.

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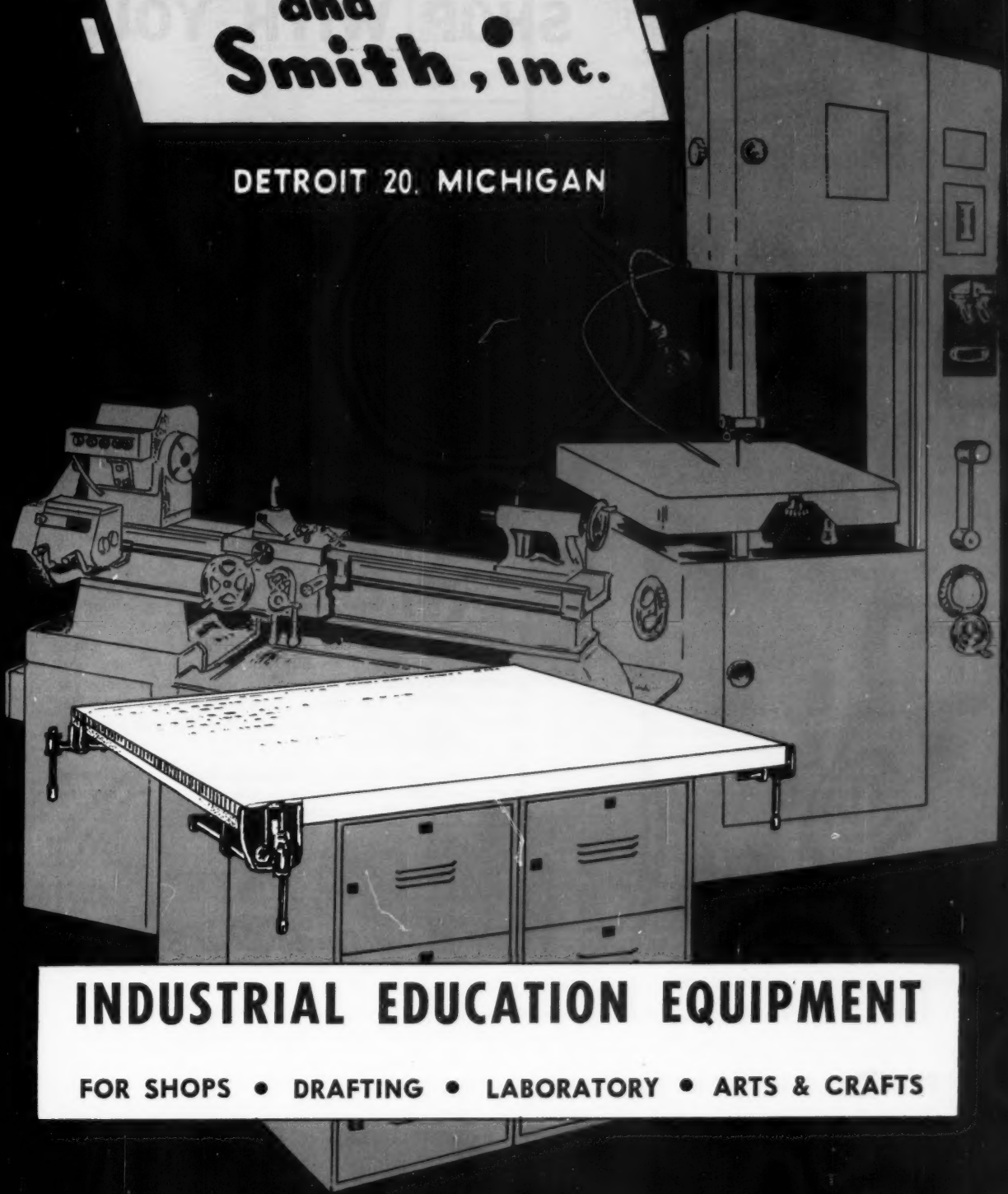

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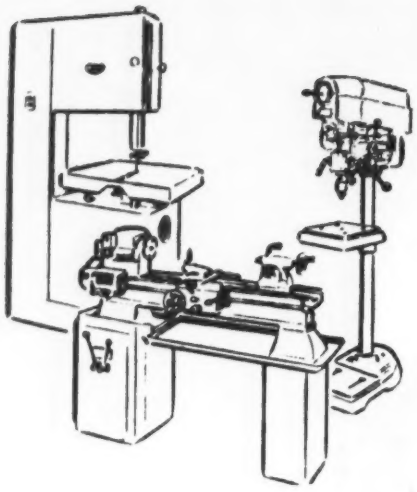

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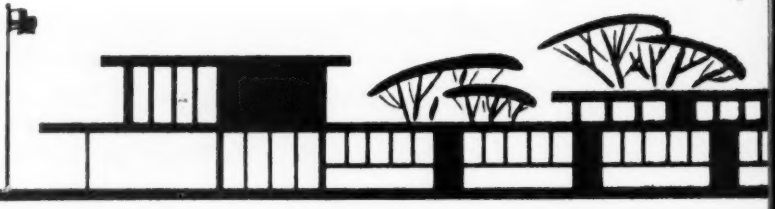

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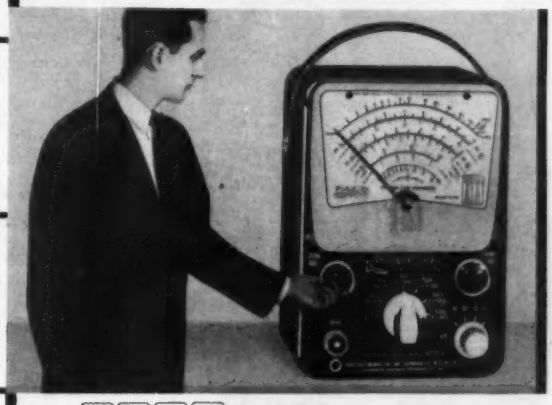

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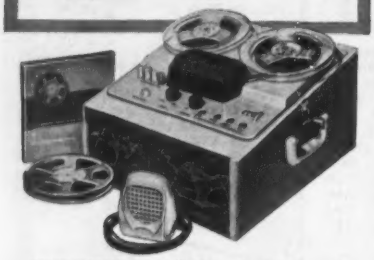

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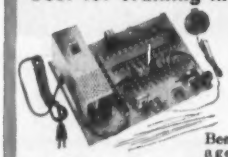

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PROMOTING industrial arts can take many forms. What might not seem an effective technique for one situation, or for one teacher, supervisor, or director, could very well be "just the ticket" for somebody else. Presented here briefly are some public-relations activities that have taken place during the past several months and which might help you in devising a solution to your public-relations problem.

West Coast Fair

Twenty-three schools in Los Angeles County took teams of industrial-arts students to the county's fair for what turned out to be a major attraction in the schools' exhibit. Woodworking, metals, graphic arts, and drafting were represented in the demonstrations done by students.

Teachers and students who participated in this public-relations activity reported that public support and interest were "high" for their demonstrations.

Industrial Arts Fair

The Industrial-Arts Club and the industrial-arts department of Fort Hays Kansas State College at Hays is holding the First Annual Western Kansas Industrial Arts Fair this month. The sponsors expect more than 200 junior-high schools and senior-high schools to take part.

Mimeographed invitations—explaining exhibit deadlines and classifications, contest rules, and awards—have been sent to schools in the area. Project entries are being planned in seven divisions and three grade groups: grades seven and eight, nine and ten, eleven and twelve. The divisions are drawing, arts and crafts, wood, graphic arts, metal, electrical, and open.

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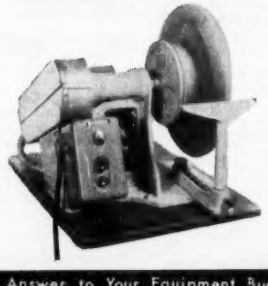

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be awarded to the school with the largest total of cumulative points in all divisions and groups.

Do-It-Yourself Program

At Camelback High School in Phoenix, Ariz., a group of nonindustrial-arts teachers meets regularly with Don Kinnaman, industrial-arts teacher, for after-hours instruction in woodworking and other areas.

One of the English instructors in the group, who regularly puts in a lot of time in the shop, has now outfitted his home shop with a combination power tool and so far has made a set of laminated bowls (one large serving bowl and eight individual-sized smaller bowls).

Another teacher made a full-sized cedar chest for his wife. Still another nonindustrial-arts teacher taking the "after-hour" shop course made a Lazy Susan out of cherry.

One result, school officials believe, that has followed from this shop-training-for-teachers program has been a 20 percent increase in regular shop-class enrolments.

Publish a Book

The work of the industrial-arts department at North Union High School, Uniontown, Pa., recently received a good deal of additional publicity as a result of the publication of a 100-page spiral-bound, well-illustrated handbook entitled *Industrial Arts at North Union.*

The book, printed offset, discusses the general philosophy of industrial-arts training at the school and then devoted sections to mechanical drawing, metalworking, and woodworking, pointing out the philosophy and objectives of each course and the program of instruction in the junior-high and senior-high school. A final section was devoted to a proposal for a unit electric shop, which included a section devoted to the estimated cost of facilities for the electric shop.

William F. Miller, head of the industrial-arts department, reports that

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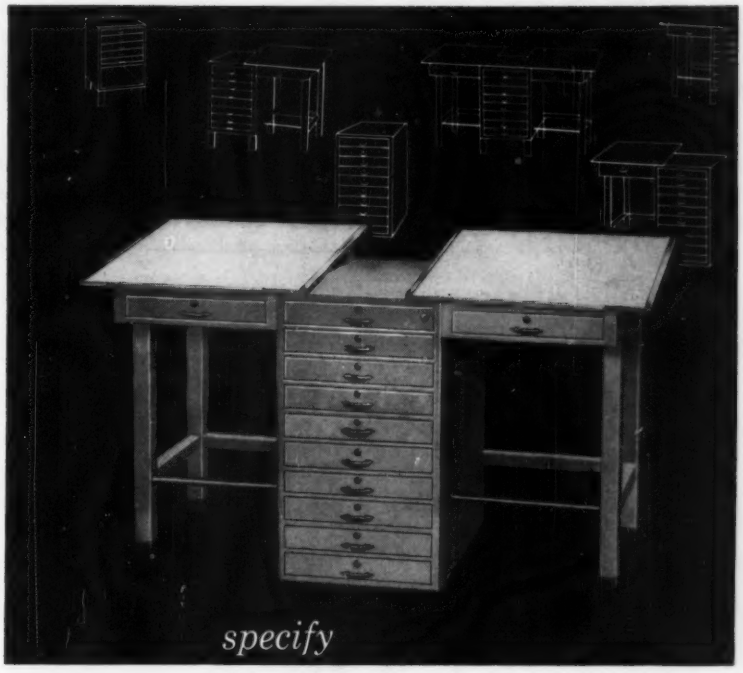

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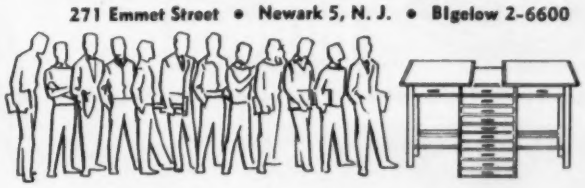


the book was prepared on a "shoestring" without the knowledge of the school board. "We raised our own money for the material and had the photography and processing donated," he writes. "The school board has been much impressed with this, our first low-cost venture. We expect to improve the book on our next attempt."

Television in Minnesota

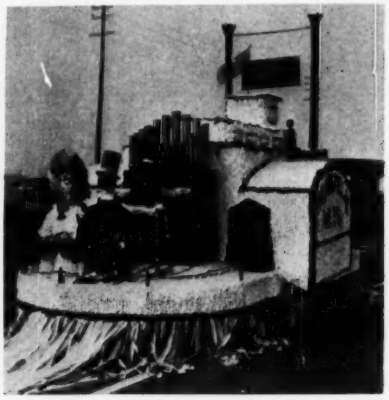
A milestone in industrial-arts education in Minnesota was a series of television shows produced at the University of Minnesota titled *Contemporary Design*. There were 13 half-hour shows in the series designed to point out to industrial-arts teachers that "design in industrial arts should be to the point . . . not arty."

The series was produced by the University education department and the Ford Motor Company. The objective was to present "guides" to sensible design; to help the viewer evaluate furniture design, architecture, and building and home interiors.

The amount of work it took to produce the shows was tremendous. For example, for seven minutes of show time, six days were spent by one of the show's creators gathering material in West Coast cities; 200 hours were spent locating material about furniture design which only took up 15 minutes of one of the telecasts. The audience response, University officials have reported, was impressive. Not only did industrial-arts teachers express their appreciation but so did professional people in the viewing area—a vital segment of any community's population.

Sweepstakes Winner

The Industrial-Arts Club at Long Beach State College, Calif., won first prize with its Mississippi River Show Boat entry recently in the college's Homecoming parade competition.



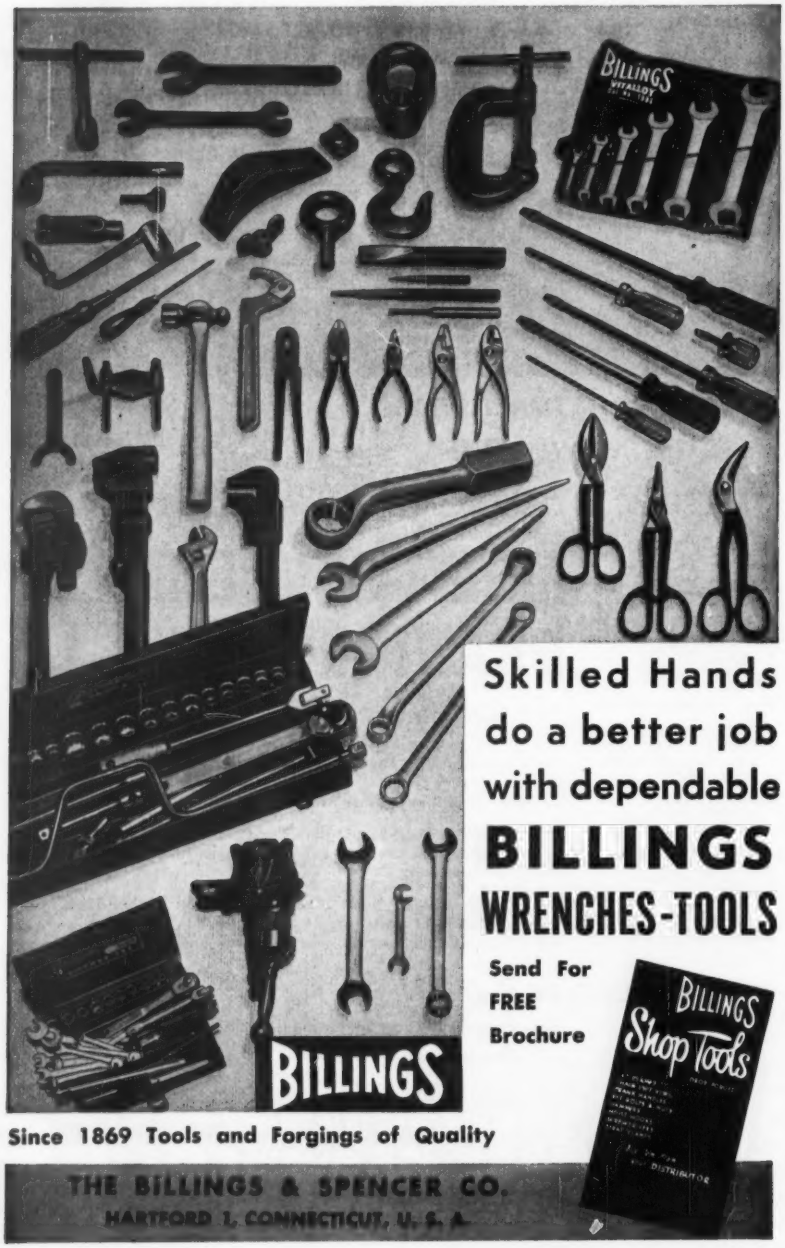
It was the only independent entry and it was complete with mechanized paddle wheels, puffing smoke stacks, fog horn, bales of cotton, kegs of molasses, mannequins, and a genuine calliope, played expertly by a Club member.

Girls from the home-economics department were recognized for the help they gave in making the float, but basically the Industrial Arts Club members put their shop know-how to work and it won for them. Their competitors were floats from 15 sororities and fraternities. This was the first time an independent entry won the Grand Sweepstakes Trophy.

Only a week before this parade, the club members set up equipment and did their stuff—spinning dishes, turning bowls, making sketches, and printing sample cards—before record crowds at the Los Angeles County Fair.

Wausau Hits the "Big Time"

The Wausau, Wis., Vocational and Adult School received excellent national publicity recently in an advertising campaign conducted by Employers Mutual. Advertisements in



the campaign—and the school was a prominent part of each ad—appeared in *U.S. News and World Report, Saturday Evening Post, Time, Business Week,* and *Newsweek* magazines.

PR Activities in New Jersey

The 43rd Annual Report of the Essex County (New Jersey) Vocational Schools devotes a section to the public-relations activities of the schools. Specially noteworthy are the following items from the report:

Planned exhibits were placed in 11 spots: libraries, savings banks, business-building windows, the Chamber of Commerce, a meeting of the American Society of Metals, and the Printing Craftsmen's annual meeting.

Each of the five schools in the county held "open house" and parent-student evenings.

Each school received spot announcements on radio stations WNEW, WMGM, WPAT, all serving the greater metropolitan area of northern New Jersey and New York City.

Representatives of the schools appeared before more than 20 community and civic groups giving talks and exhibiting a motion picture depicting opportunities offered by the schools in technical and trade training.

Each school sent out more than 9,000 letters and bulletins to parents of students describing vocational-training opportunities offered.

Glee clubs from both boys' and girls' schools made more than 25 appearances at functions throughout the county.

The schools fed more than 39 industrial publications and local newspapers a steady stream of news releases, often obtaining prime publication space.

Counselors and supervisors contacted and visited 82 out of 95 public schools and 50 out of 66 parochial schools in the county.

All of these activities were directed toward gaining public support for Essex County Vocational Schools as well as students for their classrooms. The report concludes it was worth every bit of the effort.

Use All Methods

The Richland Center School of Vocational and Adult Education, Richland, Wis., believes in using all methods of approach in getting publicity for the work of the school and the courses offered.

It recently wanted to publicize an open house and its courses. Articles and advertising were used in the two local newspapers. Announcements were made on the local radio station. A listing of the courses being offered at the school was sent to homemakers, as well as to the Kiwanis, Lions, and other organized civic groups. And publicity regarding the nurses' refresher course being offered was sent to several hospitals in the neighboring areas. ★

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Automotive

Auto Engines & Electrical Systems. 1960 ed. Motor Book. $6.50.

The Automobile Electrical System. Barr and Flocco. Chilton. $6.95.

Automobile Power Accessories. Glenn. Chilton. $6.95.

Automotive Chassis and Body. 2nd ed. Crouse. McGraw-Hill. $6.75.

Automotive Electrical Equipment. 4th ed. Crouse. McGraw-Hill. $6.00.

Automotive Mechanics. 4th ed. Crouse. McGraw-Hill. In press.

Automotive Transmissions and Power Trains. 2nd ed. McGraw-Hill. $7.00.

Auto Repair Manual. 1959 ed. Chilton. $7.95.

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Fix Your Volkswagen. Purvis. Goodheart-Willcox. $2.95.

Know Your Car. Allen. American Technical Society. $3.50.

Study Guide for Automobile Engine Rebuilding and Maintenance. Glenn. Chilton. $2.50.

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Building Trades

Advanced Bricklaying, SCPI, *et al.* Delmar. $3.50. Instructor's Guide, $1.00.

Construction Estimates and Costs. 3rd ed. Pulver. McGraw-Hill. In press.

How To Design and Install Plumbing. 4th ed. Matthias and Smith. American Technical Society. $4.95.

Plumbing-2. Slater. Delmar. $2.75. Teacher's Key, $1.00.

Plumbing. 3rd ed. Babbitt. McGraw-Hill. $13.50.

Craftwork

Ceramics, Roy. McGraw-Hill. $5.80.

Newgold's Guide to Modern Hobbies, Arts and Crafts. Newgold. McKay. $4.50. In press.

Sculpture—The Basic Methods and Materials. Johnson. McKay. $3.95.

Electricity

Basic Electricity-1. (D. C. Fundamentals) Loper. Delmar. $4.50. Lab Manual, $1.50. Instructor's Guide, $1.25.

Direct Current Electricity. Efron. Rider. $2.25.

Electric Circuits and Machines. 3rd ed. Lister. McGraw-Hill. In press.

Exploratory Electricity. Arnold and Schank. McKnight & McKnight. $1.50 (est.).

Fundamentals of Electricity. 4th ed. Graham. American Technical Society. $4.75.

Industrial Electricity. Vol. 11. 3rd ed. Dawes. McGraw-Hill. In press.

Graphic Arts

Fundamentals of Offset Printing. Cogoli. McKnight & McKnight. $4.00 est.

How to Recognize Type Faces. Karch. McKnight & McKnight. $7.50.

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Machine Shop

Machine Shop and Foundry Projects. Kauffman. McKnight & McKnight. $3.80.

Machine Shop Operations and Setups. 2nd ed. Porter, Lawshe, and Lascoe. American Technical Society. $5.50.

Machine Tool Operation. Part II. 4th ed. Burghardt, Axelrod, and Anderson. McGraw-Hill. $6.60.

Mathematics

Basic Mathematics for Electronics. 2nd ed. Cooke. McGraw-Hill. In press.

Mathematics for Engineers. Vol. 1. Rose. Rider. $6.60, cloth.

Mathematics for Engineers. Vol. 2. Rose. Rider. $6.60, cloth.

Practical Shop Mathematics. Clapham. Rider. $6.50.

Practical Shop Mathematics. Vol. II. Advanced. 4th ed. Wolfe and Phelps. McGraw-Hill. $4.75.

Mechanical Drawing and Drafting

American Technical Society's Drafting. 2nd ed. Giachino and Beukema. American Technical Society. $4.75.

Basic Mechanical Drawing. Welch. McGraw-Hill. $5.50.

Engineering Drawing. 9th ed. French and Vierck. McGraw-Hill. In press.

Fundamentals of Engineering Drawing. French and Vierck. McGraw-Hill. In press.

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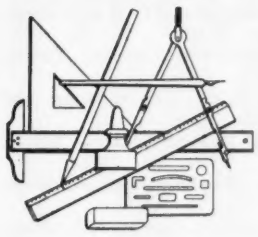

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Basic Arc Welding. Griffin and Roden. Delmar. In press.

Basic Oxy-Acetylene Welding. Roden and Griffin. Delmar. In press.

Ferrous Metallurgy Laboratory Manual. Umowski. American Technical Society. $2.25.

General Metals. 2nd ed. Feirer. McGraw-Hill. $5.48.

Sheet Metal Shop Practice. Bruce. American Technical Society. $4.60.

The Use of the Mechanics' Handbooks. Vezzani and Leuchtman. Royalle. $1.80.

Radio, Television, and Electronics

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Applications of Electronics. Grob and Kiver. McGraw-Hill. In press.

Basic Audio. Crowhurst. Rider. $9.95. (3 volumes, single cloth binding).

Basic Electricity and an Introduction to Electronics. Sams, Bobbs-Merrill. $3.60.

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Understanding Radio. 3rd ed. Watson, Welch, and Eby. McGraw-Hill. In press.

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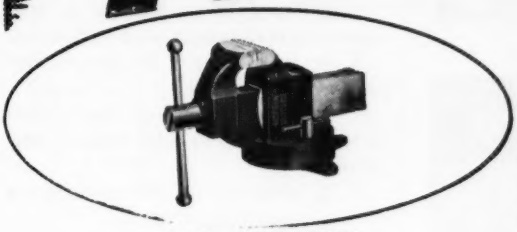

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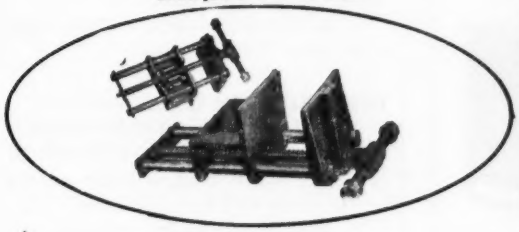

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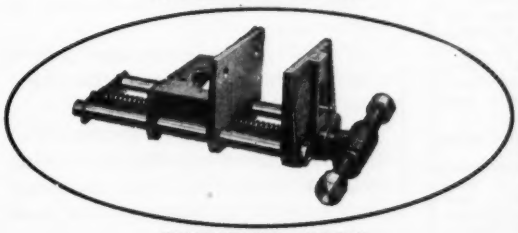

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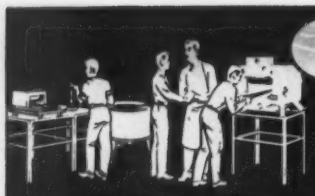

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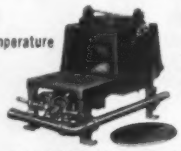

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Today's Business Machines. Fisher. American Technical Society. $4.95; paperbound, $3.25.

Tool Engineering. Rusinoff. American Technical Society. $6.75.

Interpretation . . *from page 44* not profitably develop one without the other.

Characteristics of a Good Program

What then are some of the characteristics of a good industrial-education program?

1. Its objectives must be compatible with national technical needs.
2. It must be a part of a well planned total program of education.
3. It must attract the proper students.
4. It must be staffed and supervised by competent well trained personnel.
5. It must be flexible enough to meet changing conditions.
6. It must coordinate with science, mathematics, and industry.
7. It must be properly housed and equipped.

Public-Relations Goals

A good program of public relations for industrial education will seek to establish many things. Some of its major goals will be as follows:

1. It will attempt to create an understanding on the part of the public of the need for quality training of technicians.
2. It will assist counselors to have a better understanding of the objectives of industrial education.
3. It should motivate counselors to identify students capable of achieving technical competence and encourage them to enrol in industrial-education courses.
4. It will help to create an atmosphere of understanding within the school that will encourage better teamwork between the departments.
5. It will assist students to better

understand the opportunities available in industrial education and how their individual capabilities relate to these opportunities.

6. It will make an effort to give parents information about industrial education which will result in a better parental understanding of the program.

7. It should create an atmosphere of mutual understanding between the school, industry, and business.

The superintendent's office can play a key role in the motivation of a real program of public relations for industrial education. The leadership of the superintendent may be necessary to initiate the kind of interdepartmental planning and programming that will result in the type of program which has been discussed above. Certainly no school administrator in the days ahead can afford to neglect to furnish leadership that may assist in closing the gap between scientific advancement and technological achievement. In any event, his office must exert leadership and give support to creating a better understanding of education in general and industrial education in particular. ★

Sight—Sound . . *from page 46*

tape recorder. This system worked.

The complete showing was carefully timed so we knew just what it would take.

A procedure sheet was then prepared for the use of other members of the staff when they made a showing of the presentation.

The response to the slide-sound presentation has been most gratifying. Remarks like those at the beginning of the article have been common. The school administration has found the presentation useful for adult groups and for interesting students in the program. It is one of the best public-relations devices we know.

The same technique can be used for making instructional sound-slides on the use of tools and machines and also for such topics as shop safety. Another use is for a permanent record of completed projects. This is especially good for new students as it shows them what has been accomplished and it also is something to show parents.

The possibilities for the use of camera and tape by shop teachers is unlimited. ★

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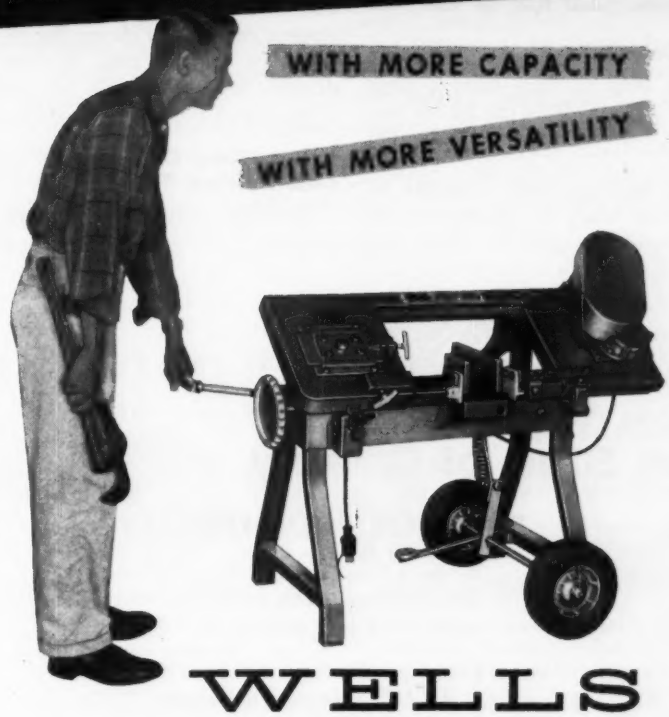

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SPECIFICATIONS

Capacity:		**Floor Space**	19″ x 47″
Rectangular	6″ x 10″	**Height (Frame Vertical)**	52″
Round	6″ Diameter	**Height (Frame Horizontal)**	37″
45° Angle	5″ x 5″	**Vertical Capacity:**	
Speeds, f.p.m.	76—141—268	Work Table	7⅛″ x 10″
Blade Size	½″ x .025″ x 93″	Throat Height	9½″
Motor	⅓ H.P.	Throat Depth	7¾″
Width of Bed	8½″	**Net Weight (Approx.)**	220 lbs.
Floor to top of Bed	22¼″		

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Color-Coding Keys

Many shop teachers carry a large number of keys. They can be for tool cabinets, lockers, drawers, and other locks.

These keys are used primarily by the teacher. Many times, however, the student tool checker or other students may need a key for a certain lock. By using a system of color-coding it is not necessary to take time to select specific keys for students. This is accomplished by applying a different color of brushing lacquer to each key and lock combination so that any student can readily choose the proper key from the key ring to open the desired lock. — *Karl D. Bramstedt, West Junior-High School, Alton, Ill.*

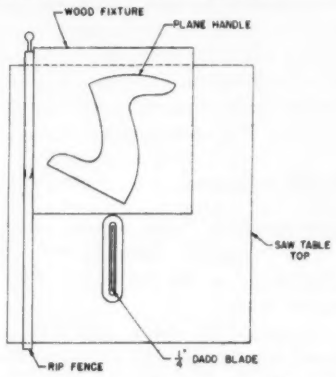
How to Keep Graphite from Drafting Tools

Drafting tools seem to have the power to pick up loose graphite like a magnet attracts steel.

Here is a very simple yet effective way to keep the draftsman's tools free of this unwanted nuisance. Many drafting teachers have the students use art gum to clean the T-square, scale, etc. Others use water and ammonia, which has a tendency to loosen the plastic from the T-square. Art gum is costly to the student and water is harmful to the T-square. An old blackboard eraser, with chalk dust from the chalk tray, has proved to be the best and least expensive for us. It may sound odd, but try it for a while. You will never go back to the old methods.

Clean your tools the same way that you would if you were using water or art gum. If a little dust does remain on the tools, it won't do any damage to them. — *George Frei, Fresno, Calif., High School.*

Repairing Wooden Handles



Broken saw and plane handles may be repaired and restored to usefulness by doing the following:

The broken parts have to be carefully aligned and glued and allowed to dry. (Any modern resin glue with good holding power is satisfactory.) While the glue is setting, make a fixture of ¾" plywood. Trace the outline of the handle on this fixture first, and then cut it out on either the jig or band saw.

After the glue has set, file and sand smooth the handle. Place the handle in the fixture, keeping the edge of the fixture against a rip gage. Now, cut a groove with a ¼" dado blade 3/32" deep. Reverse the fixture keeping the same edge against the rip gage and make the second cut.

Snug fitting strips of hardwood are then glued in these grooves. When the glue has set, the inserts are sanded flush with the surface of the handle. A decorative effect can be achieved by

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1830

making the inserts of different colored wood. — *James B. Lidstone, Devotion School, Brookline, Mass.*

Production Work in the Graphic-Arts Shop

Unfortunately, many graphic-arts shops are required to do production work. Most graphic-arts teachers do not object to an occasional job but a definite limit should be established.

Many outstanding administrators recognize the objectives of graphic arts and cooperate with teachers. Once in a while, however, we meet some administrators who think the graphic-arts shop is their private commercial printing plant. It is our job to educate and explain our position. A simple rule, that all printing jobs, even small "favors," must have an office "OK" after consultation with the graphic-arts teacher, will eliminate many commercial jobs. The form below is wrapped with each production job that is printed in our shop.

> **EDUCATION NOT PRODUCTION**
>
> We are glad to print your order and hope you are pleased with it. However, since our primary objective is the education of youth in the field of graphic arts, we are not geared to printing production. If printing jobs will fit into our curriculum and will not deprive any local commercial printer of his livelihood, we are glad to help. We must also consider the age and experience of our children and not expect perfect work because children do not do 100 percent work in English, mathematics or any subject, so we cannot expect 100 percent work in graphic arts. With these considerations in mind, future orders can be planned and completed to the satisfaction of the pupil, teacher, customer, and local printer.
>
> Yours truly,
> Nichols Junior High School Press

It is short and has been very helpful in explaining our part of general education. — *Denham R. Griffin, Nichols Junior-High School, Mount Vernon, N. Y.*

File Handles

A simple solution for making file handles is the following:

Take a piece of 3/16 mild steel rod. Shape it so that it fits comfortably in your grip. Braze it to the file at the base of the tang.

After the files have outlived their usefulness, remove the handles and braze them to a new file. The file handle makes the file safer to use without interference from the tang. Also, the files, after the handles are in place, can be easily hung on a hook for storage. — *Emil Mamula, Central High School, South Bend, Ind.*

Labels for Bottles

Bits of photo paper make good labels for bottles of photographic or other chemicals.

Soak the paper in water and squeeze it on the glass, making sure all air bubbles and excess water are removed. Apply the paper to the bottle with gelatin (sensitive) side to the glass. Be sure any foreign matter or oily film is removed from the glass surface.

Hold the label in place with a rubber band until the label hardens. — *Harry J. Miller, Gillespie Junior-High School (on leave), Philadelphia, Pa.*

Don't Use a Brush

A simple way to "solve" the brush-cleaning problem as far as finishes are concerned is, simply, don't use brushes. Instead use a wipe-on finish. Besides eliminating brushes, the finishes are superior. — *Robert C. Ielfield, Oriskany, N. Y., Central School.* ★

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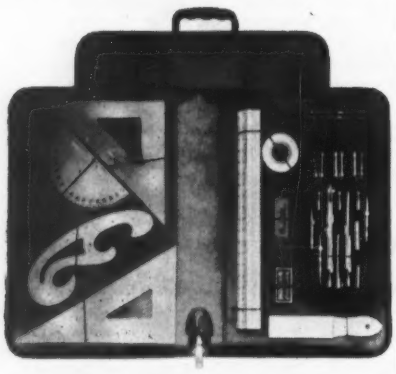

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Directory of Federal and State Officials

This up-to-date list of federal and state officials in vocational and industrial-arts education has been carefully compiled from authoritative sources. Thanks are due all the state directors of vocational education and the U. S. Office of Education for their help in preparing this directory. Keep this directory for ready reference during the year.

U. S. Office of Education
Vocational Education Division
Washington 25, D. C.

James H. Pearson, assistant commissioner and director for vocational education.
Ward P. Beard, assistant director.
Lane C. Ash, assistant director.

Trade and Industrial Education Branch

John P. Walsh, director.
Earl M. Bowler, assistant director.
Harold J. Rosengren, program specialist, Central region.
Sam W. King, program specialist, Pacific region.
—— program specialist, North Atlantic region.
Edward G. Ludtke, program specialist, Southern region.
Merle E. Strong, teacher training and service studies specialist.
Mary S. Resh, program specialist (training for girls and women).
Howard K. Hogan, consultant, employer-employe relations.

Area Vocational Education Branch

Walter M. Arnold, director.
Frank J. Coyle, program specialist.
Alexander C. Ducat, program specialist.
Robert M. Knoebel, program specialist.
Arthur B. Wrigley, program specialist.
Howard A. Matthews, program specialist.
Lynn Emerson, consultant.
Clarence E. Peterson

Secondary Education

Marshall Schmitt, industrial-arts specialist.

Alabama

R. E. Cammack, director, vocational education, Montgomery 4.
T. L. Faulkner, supervisor, agricultural education, Montgomery 4.
J. F. Ingram, supervisor, trade and industrial education, Montgomery 4.
B. G. Mantel, assistant supervisor, trade and industrial education, P.O. Box 2847, University.

Alaska

Jack Finch, director, vocational education, department of education, Juneau.

Arizona

J. R. Cullison, director, vocational education, Phoenix.
William R. Woodfin, supervisor, industrial education, Phoenix.
Bob E. Taylor, supervisor, agricultural education, Phoenix.

Arkansas

J. Marion Adams, assistant commissioner for vocational education, Little Rock.
J. C. Ruppert, director, trade and industrial education, Little Rock.
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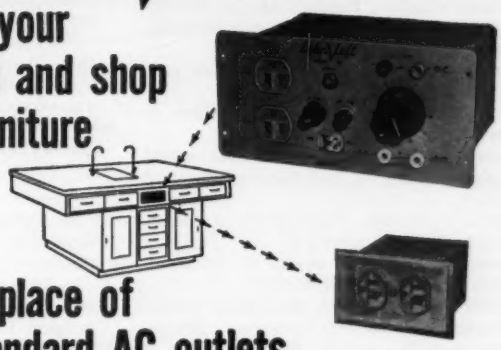

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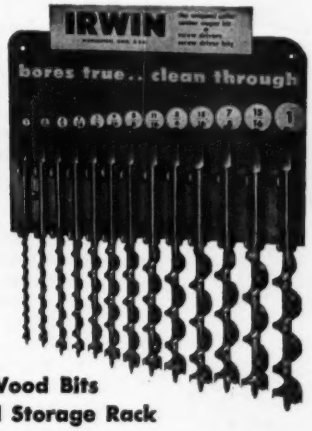

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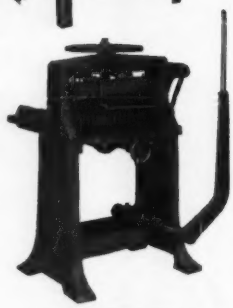

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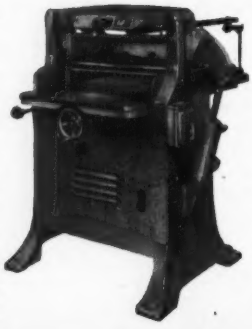

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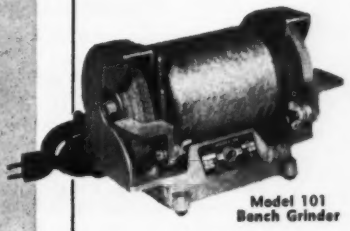

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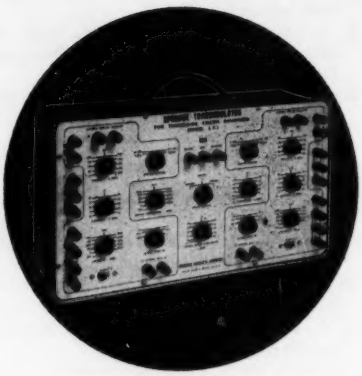

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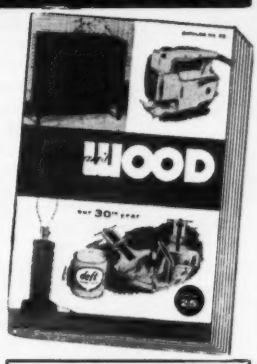

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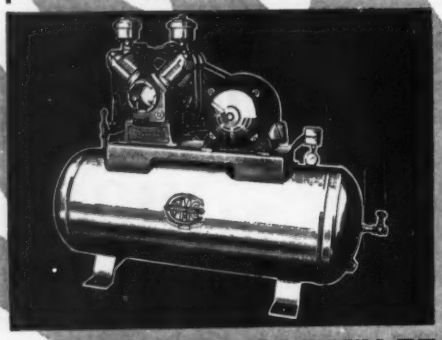

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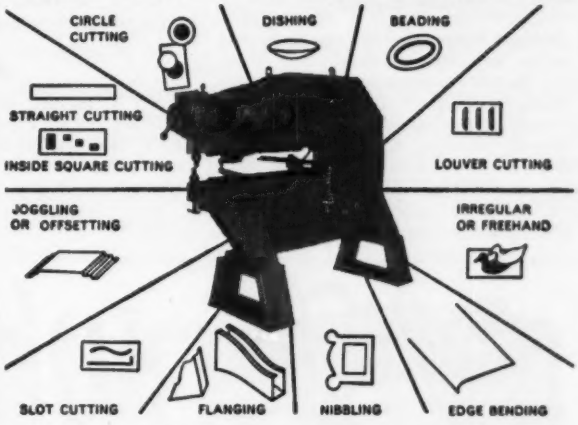

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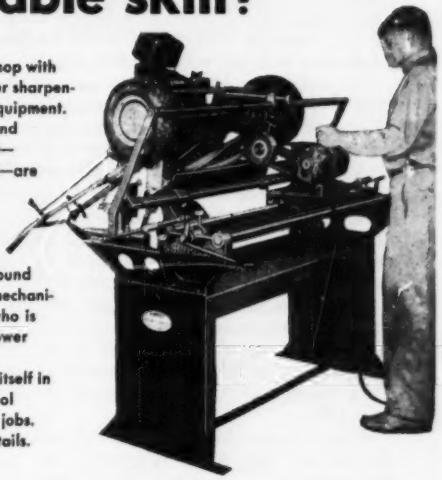

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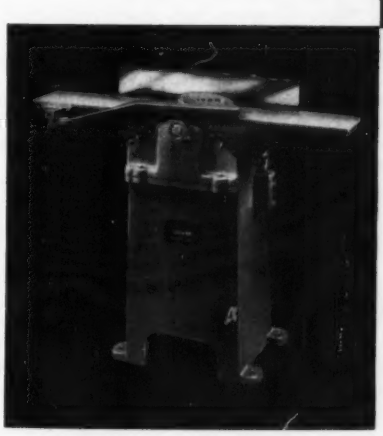

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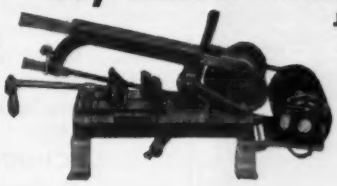

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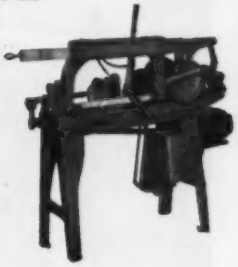

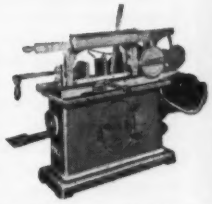

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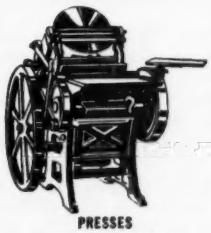
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Automotive Electrical Fundamentals is a series of five color filmstrips with synchronized recordings. Topics are: Introducing Automotive Electricity, The Cranking Circuit, The Ignition Circuit, The Regulation and Charging Circuit, and The Lighting and Accessory Circuits. Filmstrips range from 52 to 67 frames. The Jam Handy Organization, 2821 E. Grand Blvd., Detroit 11, Mich.

Delco-Remy Training Aids, revised, is a new brochure listing the training charts, chart manuals, handbooks, film kits, and film booklets available from Delco-Remy. Available from the Delco-Remy Division, General Motors, Anderson, Ind.

Pictorial History of the Auto Industry is a wall chart showing a year-by-year diagrammatic explanation of the development of the American automobile. Popular Mechanics, Bureau of Information, 200 E. Ontario, Chicago 11, Ill. 25c each.

The Story of the Modern Storage Battery is a 16mm color film which explains the chemistry of the simplest electric cells, shows how a laboratory model converts metal and acid into electric power, and applies these principles to the manufacture of modern storage batteries. Available free from Ideal Pictures, Inc., 58 E. South Water St., Chicago 1, Ill.

Tommy Gets the Keys is a 13½-minute movie telling the story of safe driving, sportsmanship, courtesy, and skill on the highway. Available to schools through local B. F. Goodrich dealers.

Graphic Arts

List of Visual Aids of 16mm Films and Other Visual Aids on Various Aspects of Printing, prepared by the Graphic Arts Information Service of the Rochester Institute of Technology, lists more than 100 items. Available from the Institute, University of Rochester, N. Y.

Printing: Platen Press Makeready is a 16mm, sound, b&w movie that explains and demonstrates the process of making ready a platen press and the type form. Running time: 15 minutes. Graphic-Arts Department, Stout State College, Menomonie, Wis.

Machine Shop and Metalworking

Abrasive Belt Chart. Available from Porter-Cable Machine Co., 700 Marcellus St., Syracuse 1, N. Y.

Arc Welding Electrode Selection is a 25-minute, 16mm, color film that tells the basic factors which are important for correct electrode selection. For reservations to show the film, write Film Library, Hobart Brothers Co., Troy, Ohio.

Design, Construction, and Application of High-Precision Boring Heads is a 11-minute, color-sound filmstrip. Available from the Briney Mfg. Co., 1165 Seba Road, Pontiac, Mich.

Engineered Screw Machine Tooling Applications is a 16mm, sound, color film featuring eight practical applications of the latest design automatic screw machines. Running time, 35 minutes. Available on free-loan basis from Machine Tool Division, Brown and Sharpe Mfg. Co., Providence 1, R. I.

Grinding Wheels Are Safe . . . Use But Don't Abuse is a wall chart with two columns of do's and don't's to follow when using a grinding wheel. Available from the Grinding Wheel Institute, 2130 Keith Bldg., Cleveland, Ohio.

The Miller That Uses Its Head is a 20-minute, 16mm, sound movie in color showing the applications of the Nichols milling machine. It shows slotting, straddle milling, plunge milling, face milling, and end milling. Available on free-loan basis from The Robert E. Morris Co., West Hartford 7, Conn.

A Product of the Imagination is a 16mm, sound movie showing how aluminum is forged, cast, rolled, drawn, extruded, and impacted. A 35mm Eastman color negative also is available. Motion Picture Section, Aluminum Co. of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.

Supreme Push-Pull Tapper Movie is a six-minute demonstration in color of the use of the attachment for portable drills. Available from Supreme Products Corp., 222 S. Calumet Ave., Chicago, Ill.

Use and Care of Handtools is a series of six 16mm films on wrenches, pliers and screwdrivers, chisels, hammers, punches, and hacksaws. Available for purchase or on a free-loan basis, paying postage, from Proto Tool Co., 2209 Santa Fe Ave., Los Angeles 58, Calif.

Radio and Television

Peak to Peak VTVM Demonstration Board Kit, 249-D, is a selfteaching demonstration unit with all parts and controls mounted on a 24" x 30" hardboard panel. Schematic symbols and all wiring are shown on front of the panel. A large 7½" meter mounted on the panel makes readings visible to the entire class. Electronic Kits Supply Co., 1727 Glendale Blvd., Los Angeles 26, Calif.

Signal Tracer Demonstrator Board Kit, 147-D, uses the Eico multi-signal tracer No. 149 mounted on a 24" x 36" headboard pan-

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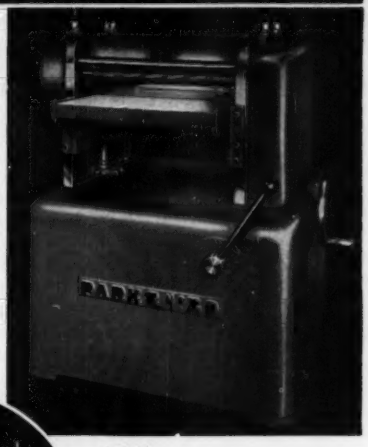

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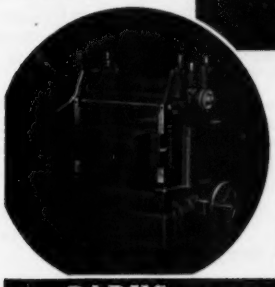

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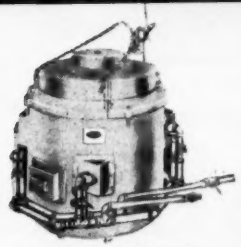

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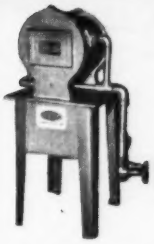

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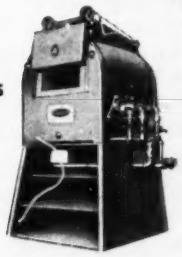

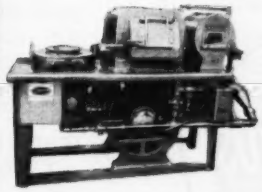

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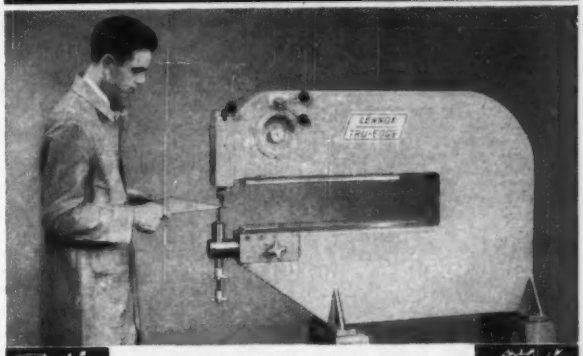

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el, with the schematic diagram and all components visible from the front. Electronic Kits Supply Co., 1727 Glendale Blvd., Los Angeles 26, Calif.

Voltohmmeter Demonstration Board Kit, 566-D, uses an Eico 1000 ohms/volt multimeter kit mounted on a hardboard panel 18" x 27". The components are placed near appropriate schematic symbols. Electronic Kits Supply Co., 1727 Glendale Blvd., Los Angeles 26, Calif.

Safety

It's Up to You is a 16mm, sound-color film on an industrial eye-safety program, prepared with the cooperation of the National Society for the Prevention of Blindness. Available for rent or purchase from Harvest Films, 90 Riverside Dr., New York 24, N. Y.

Woodworking

A House for Albert is a 12-minute, 16mm sound movie which tells the story of building a dog house for Albert, a St. Bernard, using a Millers Falls 888 power workshop. Millers Falls Company, 57 Wells St., Greenfield, Mass.

Hammers, Screwdrivers, Nails, and Screws is a set of 35mm filmstrips, consisting of nine strips, a total of 149 frames. $5.00 per set, including a *Manual of Suggested Questions* for testing. Stanley Tools, Education Dept., 111 Elm St., New Britain, Conn.

Water Ski Wall Chart is a chart giving complete instructions for making water skis. Western Wood Manufacturing Co., 6348 S.W. Macadam, Portland 1, Ore. Free.

Miscellaneous

Insulating with Plastic is an 18-minute, sound-color filmstrip that traces the development of flexible, foamed-plastic insulation, describes its properties, and shows a number of application techniques used in actual insulation of pipes. Available from Armstrong Cork Co., Lancaster, Pa., or from its Insulation Division field offices.

It's Almost Tomorrow is a 16mm, sound-color movie showing how clubs for vocational-industrial students are assisting in preparing youth to become productive leaders of tomorrow. Industrial Education Department, Division of Extension, The University of Texas, Austin.

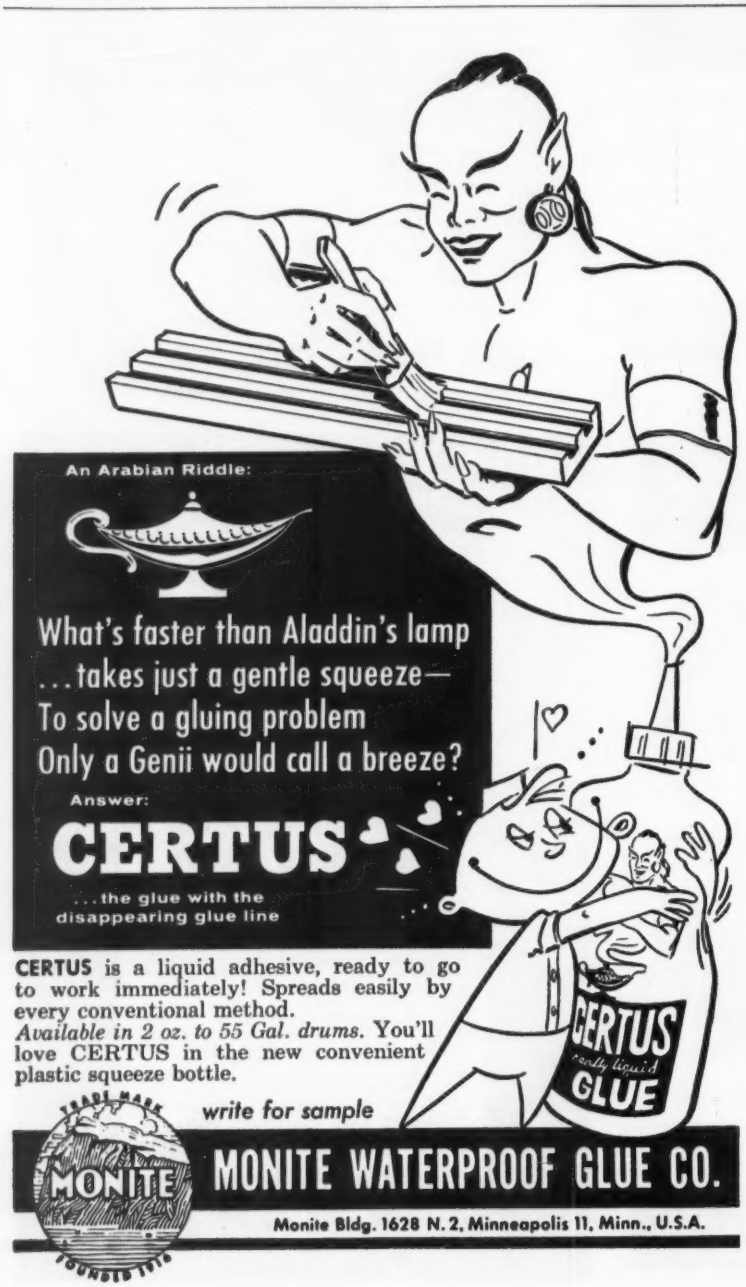
The Modern World of Industrial Arts is a 12-minute, sound-color movie on the philosophy of industrial arts. Virginia State Department of Education, Richmond.

Tomorrow's Trees is a 30-minute, color movie. It includes scenes taken from a 250-foot Douglas fir tree as it is felled and scenes from a helicopter planting tree seeds. Available on free-loan basis from the Weyerhaeuser Co., Tacoma Building, Tacoma 1, Wash.

Transistors: Low Frequency Amplifiers and *The Naval Research Laboratory Reactor* are two 16mm motion pictures now made available by the U. S. Navy Department. Running time, 15 minutes and 21 minutes, respectively. Distributed by United World Films, Inc., (Government Department) 1445 Park Ave., New York 29, N. Y.

Trundle-Mounted Demonstration Slide Rule is an 8' enlargement of the K & E Log Log Duplex Decitrig with working slides and indicator. It can be turned 360° to demonstrate scales and slide operation on either side. Keuffel & Esser Co., Hoboken, N.J.

Visual Vapor Action Demonstration Unit is a visual aid designed to help students understand the nature of paints, varnishes, and enamels and how vapors work in keeping brushes and spray guns ready to use. Available free from Wisconsin Laboratories, Inc., Dousman, Wis.



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Stratford . . . . . *from page 35*

6. *Rating of Students.*—Once a year, a rating list of students in the ninth through eleventh grades is compiled. This list of ratings is based on attitude and achievement in not only the students' shop courses but their academic subjects as well. Copies of this rating list are posted in all shop departments. Copies are also given to the principals of both junior-high schools. The guidance counselors receive a copy too.

7. *Placement in industry.*—Local industry, annually, hires several of our students for part-time employment prior to graduation. Generally three to four students are interviewed for each vacancy. This gives our students experience at completing job-application forms, meeting with personnel interviewers, and going

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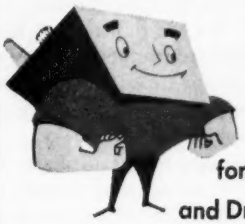

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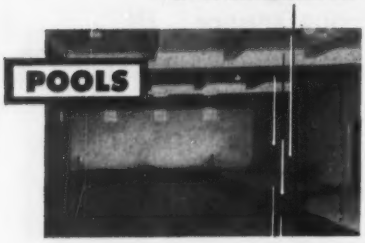

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through the preemployment procedure. Students highest on the aforementioned rating list invariably are those hired. Industry people notify the director of their decision and the director in turn follows up with a conference with the students concerned to discuss the interviews.

8. *Parents' Night.* — Several times each year the school holds Parents' Night. The evening is divided into regular class periods. Parents go through a simulated day's schedule. In each "class period" the instructor explains the work being done by students, the equipment the boys are learning to use, and shows projects that students have made.

9. *Displaying work to the board of education.* — Whenever we have student projects that show outstanding work we display them in the board of education office on the night of its meeting. We do this, too, when a project has just been completed that involved in its making a particular piece of new equipment or material the board had recently approved for purchase.

10. *Project displays.* — A perpetual display of work done by present or former shop students is maintained in each of the shops and drawing rooms. These displays of outstanding work often draw from visitors such comments as, "If this is where my taxes go, it is O.K. with me."

11. *Yearly work reports.* — We prepare an annual report of the work done by our shops for the school, PTA, church and civic groups, and the amount received from sale of projects. The report for 1957-58, for example, showed the commercial value of printing work for the principal's office amounted to $3,017.00. The commercial value of work done for the school or improvements and repairs in the shops totaled $318.00. School club and civic groups received $610.00 worth of service. Cash collected for student projects and miscellaneous work for students and organizations came to $2,322.12.

This report is distributed to the newspapers, the superintendent of schools, the board of education, the business manager, and the high-school principal.

We use this report as a factor in making up the following year's budget. The amount of cash collected is publicized in the yearly "Town Report."

12. *Using the state employment service.*—Every effort is made to make available to students the services of the Connecticut State Employment Service, an affiliate of the United States Employment Service. Representatives of the service talk with the graduating class about job prospects, register the students with the service, administer written and manual dexterity tests, the results of which are later interpreted to each student in a private conference, and in general bring employers and prospective employes together.

Publicity Resulted

13. *Guidance group meetings.* — Guidance counselors are encouraged to hold their meetings in the Stratford High School. Last year the Fairfield County Guidance Group held its annual meeting in Stratford. Members of the Bridgeport Manpower Commission participated in the discussions. All who attended the meeting toured the shops where they saw students at work. The director of the industrial curriculum met with the guidance group and the manpower commission members to discuss the program. It is interesting to note that following this meeting the Bridgeport Manpower Commission recommended that all high schools in the area develop industrial curriculums patterned after the one in Stratford High School. This recommendation was publicized in our newspapers and was included in the appendix of the Commission's final report.

14. *Follow-up studies.* — Each fall we gather information about the progress of our graduates. We learn where they are employed, in what capacity — or where they are continuing their education — and what success they are achieving. This information is used for publicity and to help us evaluate our program, to change it where necessary, to add new equipment in the shops.

What I have attempted to do in this article is the following: (1) describe the nature of the community in which our school is located; (2) show why we needed to inaugurate an industrial curriculum that would give our students marketable skills; (3) how we strive — on a year-to-year basis — to maintain and increase community support for our curriculum. At the heart of our public-relations effort is the student and his career in school and the career he starts after he has left us. ★

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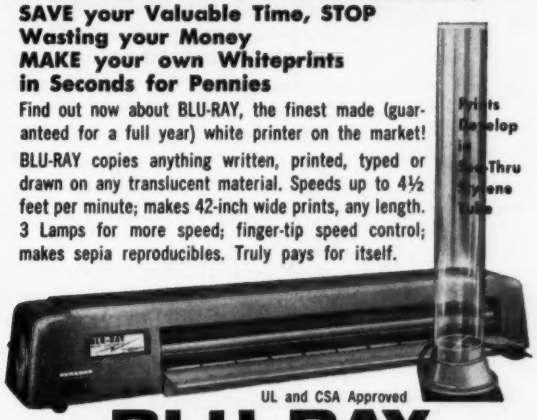

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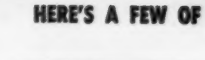

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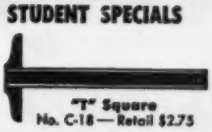

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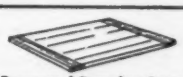

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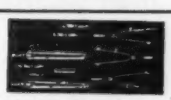

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Interpreting . . . . *from page 37*

and the contributions made to the education of boys and girls. The recommendations included one year of industrial arts, with experiences in drawing, wood, metals, and electricity, with handicrafts and printing for a semester alternating with art or some other subject. Where facilities are available, industrial arts is elective in the upper eighth and ninth grades. The recommendations, after considerable study, were accepted and made a part of suggested course offerings in the junior-high school.

Industrial arts in the senior-high school is offered in many fields on a unit basis, with 84.2 percent of all boys enrolled in one or more courses during the last semester of 1958-1959. Counting those who take more than one class, enrolment at this time was 115.9 percent.

After detailed plans were submitted as previously outlined, courses for more able students in the senior-high school were offered in basic electronics and engineering drawing.

Programs of vocational-industrial education require more time to interpret, plan, and put into operation than those in industrial arts. A need must be shown; students who are interested must be found and selected before a principal will consider such a course. We are fortunate that administrators have followed a policy of allowing final approval to be given by the instructor before a student is enrolled in a vocational course.

Overcrowded conditions in our senior-high schools have required shop and laboratory facilities to be used for industrial-arts courses where principals feel more students may be served, thus making it difficult to schedule trade and industrial classes. Considerable effort is put forth in explaining and showing, through facts and figures, the possibilities of vocational courses which will meet the needs of many students and which require approximately the same student class hours for the use of facilities.

At the present time, I am presenting information on industrial-education enrolment to each of the senior-high-school principals and making proposals for future scheduling of such courses. Department chairmen in each of the schools and the industrial-education staff must understand the plans and, of primary importance, must be doing an excellent job of conducting industrial-education classes.

One of the greatest deterrents to interpreting a program of industrial education can be one poor program or instructor in a school. To help with such a situation, I work closely with the personnel department in the recruitment and selection of teachers. The requirements for industrial-education teachers are such that department chairmen, or supervisors, have a unique opportunity to help in teacher selection. In my case, help is requested.

As I work with the various members of the central staff, I try to be prompt with answers to any requests they make. For example, as plans and equipment lists are requested for new industrial-education facilities, I try to have such plans or lists in the office before anyone else, and in so doing have established good relations with those concerned.

I make it a point to take administrators on visits to various classes, and in instances where I am proposing a new class in a school, I take the principal to a school where such a class is in operation.

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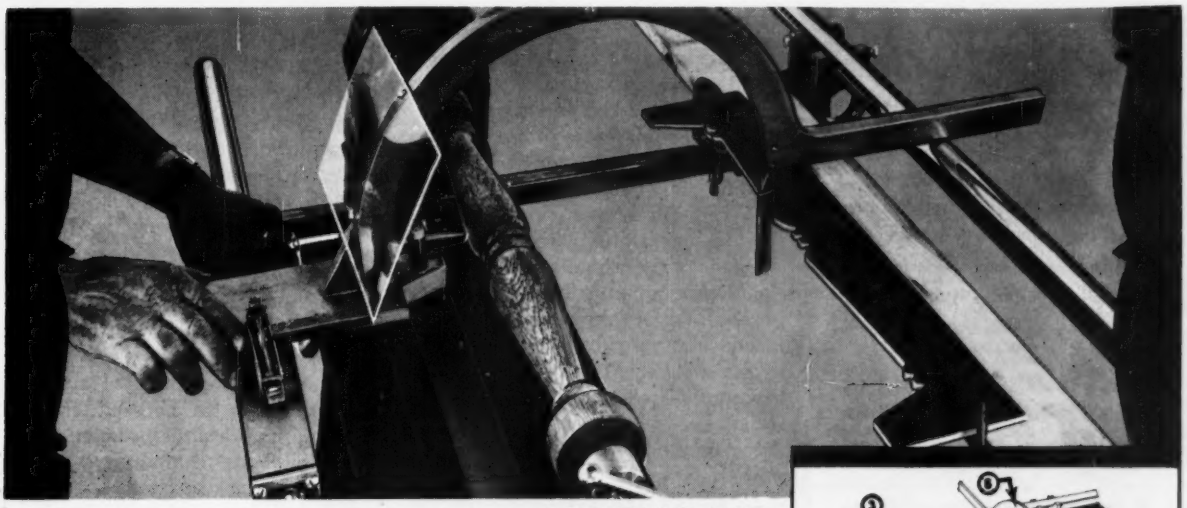

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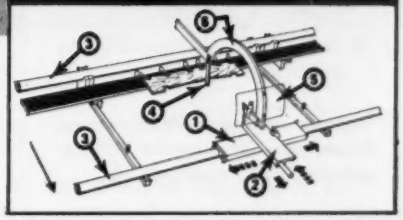

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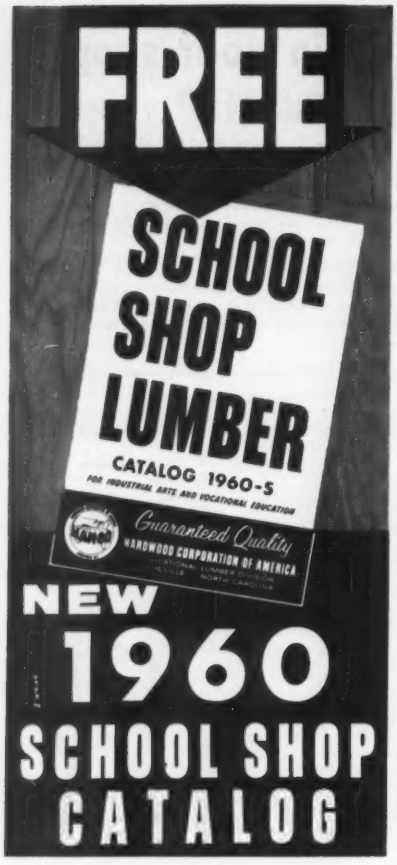

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Another means of interpreting industrial education to the administration is in encouraging and helping industrial-education teachers to become counselors and principals. Over the last few years a number of teachers in the department have been placed in such positions, thereby making it easier to interpret the program to students and staff.

There are at least three important factors which pertain to interpreting industrial-education programs to the administration. One must explain, first, the changes which are taking place in the nature of the goals and methods of our industrial-education classes; second, the increasing importance being attached to the need for public understanding; and, third, the evolving and expanding meaning of democracy.

The most successful means of interpreting a program is founded on common sense, personal integrity, initiative, and a genuine personal attitude of friendliness toward all persons in the community. Those persons especially interested in the industrial-education program are administrators, taxpayers, public officials, students, parents, representatives of newspapers, members of civic groups, and fellow teachers.

The most important public-relations devices that can be used are a sound industrial-education program and *you*. Make the industrial-education public-relations program *your* public-relations program.[2]

With these points as a guide, the interpretation of any program takes place as one works with the various divisions of the school administration.

The program must be educationally sound and meet the purposes of public education as subscribed to by your administration. The worth of any program is reflected by its product, the children; by the teachers; and by the supervisory and administrative staff.

How does your administration feel about your program of industrial education? Do they understand its purposes in the over-all curriculum of the school? Have you done a good job of interpreting industrial education to the school administration? Make your answer — *yes*. ★

[1] *The Role of the Supervisor in Educational Leadership*. Tulsa, Oklahoma: Tulsa Public Schools, 1959.

[2] *Your Public Relations*. Washington, D.C.: American Vocational Association, Inc., 1954.

Loud and Clear . *from page* 29

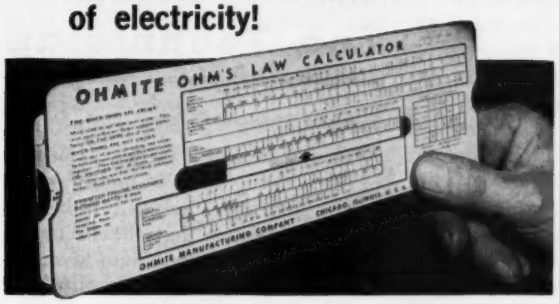
tion but it also gives status to the industrial-arts student and provides him with an opportunity to demonstrate his proficiency and knowledge in an area of industrial arts. One of the pictures with this article shows a view of the industrial-arts display at last fall's Los Angeles County Fair. This exhibit was a cooperative endeavor in which the efforts of several school systems were coordinated by the Los Angeles County Coordinator of Industrial-Arts Education, Mr. David O. Taxis.

Award Programs

In most schools, achievement in the industrial-arts program is recognized in award assemblies, as is achievement in other departments within the school. If you are not doing this at your school, look into the possibilities that exist to give recognition to deserving students in this manner. If your school doesn't have a way of handling the cost of providing ribbons, certificates, or trophies, most community service clubs will help. See the accompanying samples of a couple of ways in which local service clubs have been of assistance to industrial-arts teachers. If handled well, your service-club contact can be another plus factor for your industrial-arts program. Not only will you have an opportunity to tell the student body about some of the contributions to the general education of youth as you present students their awards but your service-club contact may bring you an opportunity to talk to the dads of many boys—and girls too — who may not be taking industrial-arts courses.

Most industrial-arts teachers are familiar with the Industrial Arts Awards program sponsored by the Ford Motor Company. Have you tried following the Ford pattern and developing an awards program or exhibit in your community? Many school systems successfully employ this technique to reach thousands of youngsters and adults. Some districts tie in their program with Public Schools Week activities in the spring of the year and gain an additional benefit by having more general participation on the part of youth and parents. One school district uses a district-wide display of student-made projects as an opening night's activity during Public Schools Week. Following a large, centrally located exhibit, some school systems return

A time-saving calculator for students of electricity!



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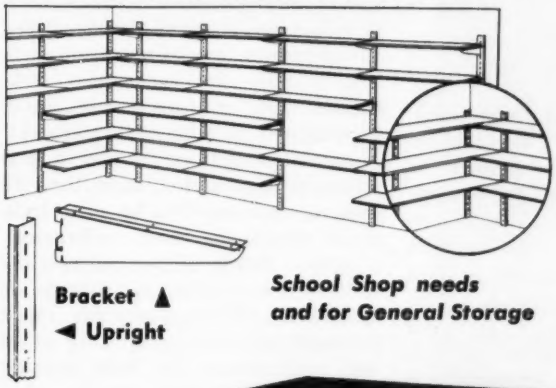

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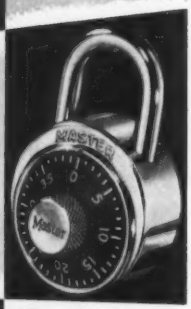

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student projects, with recognition ribbons attached, to their respective schools where they are placed on display for several days. In some instances, these displays of student projects have been so effective that the library is used as an exhibit area within the school and all students are taken to the library during one of their classes to view the arts exhibit.

PTA programs offer still another approach to the problem of telling the industrial-arts story. Many schools have an industrial-arts and homemaking night. Several approaches may evolve as plans are formulated for such an event. An awards and exhibit night usually proves to be a popular way of giving recognition to students and of displaying student-made articles. One type of PTA program that brings an impressive response, however, is a do-it-yourself night where parents actually construct and finish a useful article during an evening's program. Although activity is the theme of the evening and it is designed primarily to develop enthusiasm, an opportunity exists for you to take a few minutes and emphasize some of the learnings and opportunities that are typically industrial arts. As more parents realize the unique contributions that industrial arts makes to the general education background of their sons and daughters, your list of loyal supporters increases considerably.

A friend of the writer, J. Lyman Goldsmith, of the Los Angeles City Schools, has a clever presentation that he makes at various times called, "Your HR Is Showing." This presentation has an important message for you and me. The HR in the message is Human Relations and it shows on all of us all the time. The question here is does it show the way we want it to show? Will it bring credit to the program which you and I represent?

Someone has said: If you work with your hands, you're a craftsman. If you work with your hands and your head, you're a technician. If you work with your hands, head, and heart, you're an artist. If you work with your hands, head, heart, and feet, you're a salesman. If you combine all these qualities with competency in a field, good public relations, and an educational background, *you're a teacher.* And if your words and actions reflect enthusiasm for your program, you're a leader. Get out and tell your story! ★

News ABOUT TRAINING

The Technician

Kansas Study

A RECENT study by Merle W. Bodine of the training needs of highly skilled technicians in 23 selected industries in Kansas shows that the industrial representatives in that state favor vocational-training programs in the local public-school systems. Very few of the industries reported they were equipped to meet their own training needs.

From an analysis of the 42 technical occupations studied by Mr. Bodine in the 23 industries, it was concluded that there should be a common core of experiences and related technical information for all technician-training programs. This should include the following:

Industrial organization and operation; industrial instruments, their uses and applications; industrial equipment, its use and application; oral and written communications; human relations; engineering drawing or technical drafting; blueprint reading and schematic reading; hand and power tools; algebra; plane geometry; and trigonometry.

In addition, of course, the individual curriculums for the various classifications of technical occupations would require specialized courses.

The study also found that technicians work extensively with drawings, reports, records, and handbooks. Nearly 70 percent were found to read technical reports, and more than 50 percent were required to write technical reports in their daily work activities. Nearly 75 percent used engineering and technical manuals or handbooks. Seventy percent made freehand sketches or working drawings, and nearly the same number recorded or compiled data.

Three-Part Program

A THREE-PART educational program to meet this country's vital need for qualified industrial manpower is necessary today, according to G. Ross Henninger, Cincinnati, Ohio, president of the Ohio Mechanics Institute and its technical institute division, Ohio College of Applied Science.

Mr. Henninger believes it is now evident that in order to produce ef-

ficiently an adequate supply of competent manpower for the essential three-part engineering team of engineer, engineering technician, and skilled mechanic, a three-part educational program is required: the university-collegiate professional program for engineers and scientists; the technical-institute program at collegiate level for engineering and scientific technicians; and the vocational-trade and vocational-technical programs for industrial technicians, craftsmen, and skilled mechanics.

"The general high school has a critically important role to play in this program," Mr. Henninger states. "It has the opportunity to prepare and counsel interested and qualified persons to enter either of the first two of these programs. And the third program is one that can be carried on effectively in a competent technical high school."

A 1958 national survey of technical-institute education, directed by Mr. Henninger for the American Society of Engineering Education, showed a total enrolment of approximately 48,000 students in 121 schools and colleges offering curriculums considered to be of technical-institute character. Mr. Henninger states that this is only 10 percent of the presently indicated potential need.

Tech-Ed Conference

PRACTICAL problems of planning technical-education programs in terms of facilities, curriculum, and instructional equipment were to be discussed at the Second Annual Conference on Technical Education at Jacksonville, Fla., March 25-26.

Speakers and consultants at the conference were: Lynn A. Emerson, consultant for technical education, U. S. Office of Education; Joseph T. Nerden, chief, Bureau of Technical Institutes, Connecticut State Department of Education; and Ernest A. Venk, assistant dean of technical education, Henry Ford Community College, Dearborn, Mich.

New Connecticut Institutes

DEDICATION exercises were held in December for the new J. M. Wright Technical School in Stamford, Conn. The school was established in 1919 with eight shops. The new building, on an 18-acre campus given to the school by the city of Stamford in a beautiful park setting, has 17 shops. Paul J. Cubeta is director of the school which is the ninth of the 14 new buildings planned by the state in its ten-year modernization program of its technical institutes. Ground was broken this fall for the new building of the Norwalk State Technical Institute.

Discuss New Plan

UNION COUNTY, N. J., Board of Education members, in planning a county vocational school system, are now studying a proposal for a two-year post-high vocational school. The members feel, it was announced, that a technical institute rather than a four-year vocational program would better serve the interests of the districts. The proposal is receiving further study.

New Building at Temple

TEMPLE UNIVERSITY, Philadelphia, Pa., has announced the purchase of a 10-story office building on the main campus for the new site of its Technical Institute.

The facilities, which were to be available in February, include larger classrooms, more laboratories, new equipment, and the addition of a technical library. ★

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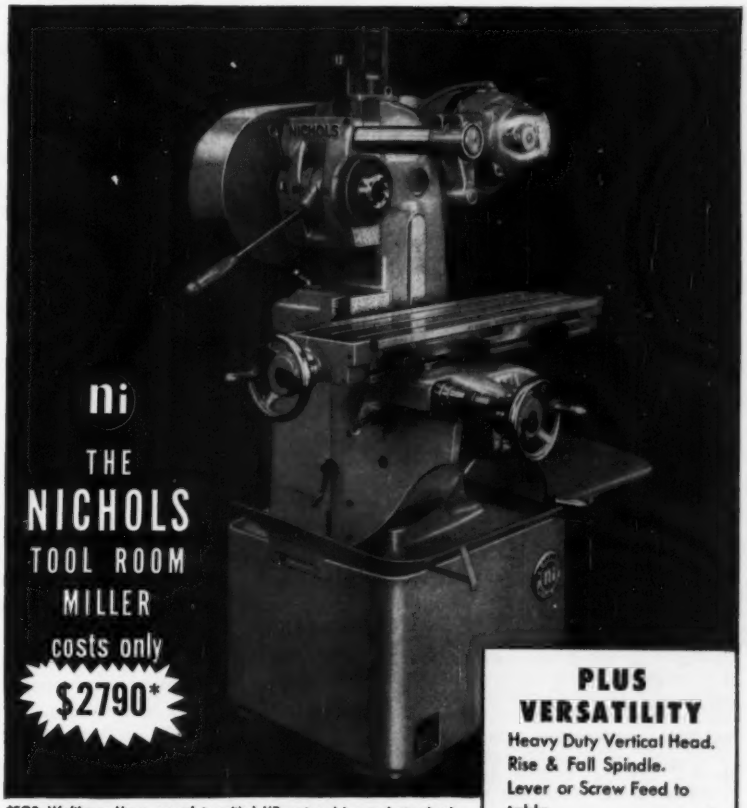

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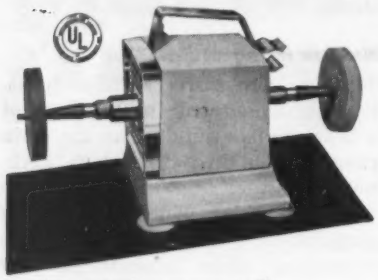

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Des Moines . . . *from page 41*

cerning industrial-education training that is available. If we happen to be a little late furnishing the information to a particular industry they generally give us a phone call requesting the announcements. We are able to maintain this relationship with industry by: (1) going to industrial people to find out what their problems are; (2) by trying to do something to help them with their training needs. We find that this procedure works much better than sitting in an office and waiting for industry to call on us. This procedure also enables us to keep abreast of industrial changes so that we can feed information back to our teachers to be incorporated into their teaching where advisable. If industrial educators are really going to interpret modern industry for our youth, we think that constant contact with industry is essential.

Mr. Musselman is in charge of our part-time cooperative training program in the trade and industrial field. He finds that constant contact with industry is essential for placement of our "co-op" students and graduates. Abe is also responsible for supervision of our apprentice training. In that capacity he works very closely with joint apprenticeship committees and with Mr. Russell Kelso, State Supervisor of Apprenticeship and Education, U. S. Department of Labor. The relationship between Messrs. Kelso and Musselman is unparalleled. Since Mr. Musselman is also a pressman by trade, we feel this background of trade experience has been of untold value in the relationship which our industrial-education department enjoys with organized labor.

Mr. Cramlet is responsible for all of our adult programs in trade and industrial education. He is also principal of the adult division of Des Moines Technical High School. Through Mr. Cramlet's wide range of friends and acquaintances throughout central Iowa in industry and business our story of industrial education in Des Moines has been told many times. He has gained the respect of local industry by his honest and sincere method of setting up training programs for them and through his other relationships with industry.

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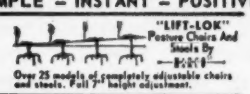

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education and business, my coordinators and I attempt to operate as a team. We have numerous conferences and "bull sessions" wherein we tear a problem to shreds, analyze the pieces, and then assemble them into a solution.

When we have a story to tell to the general public, we decide who in the community should tell the story. We then provide our "teller" with all of the facts, pro and con. He then tells our story in his language. We attempt to keep no secrets or hide skeletons in closets.

We feel that honesty with the public is the only way that a sound industrial - education public - relations program can be developed and maintained. When we let our Chamber of Commerce, the Iowa Development Commission, the Polk County Labor Council, the Iowa Manufacturers Association, the various contractor's associations, and others know that we are attempting to cooperate with them by providing the kind of industrial education that is needed by our work force, we find that they are among our best promoters. We do not use any "gimmicks" to tell our story to the public. We feel that a well-trained graduate, who is capable of filling a place in industry, is our best "gimmick."

In the promotion of publicity for industrial education we, like many others, use radio, TV, a 16mm film, newspaper releases, speeches, exhibits of student work at open-house programs, etc., but we feel that a genuine and successful public-relations program is, as we have tried to describe in the foregoing, the actual day-by-day working relationship that is maintained by the industrial educator in operating an educational program that attempts to meet local and area needs. ★

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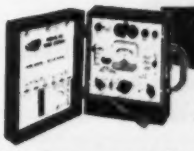

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happenings in industrial education

AIAA Convention

IN keeping with its first convention outside the territorial limits of the U. S., the American Industrial Arts Association will devote its convention meetings this year to the theme "International Understanding – Implications for Industrial Arts." The convention will be held April 19-22 in the Royal York Hotel, Toronto.

Speakers who will discuss aspects of the theme include John H. Furbay, director of the International Association for Air Age Education. Allan Jarvis, formerly director of the National Gallery of Canada, now associated with the Society for Art Publications, will speak on "International Influences on National Design."

Panel discussions will be held after the talks. Leaders of the panel following Dr. Furbay's address will be: Owen Harlan of Nebraska, Lawrence Frederick of New Mexico, Russel G. Louis of Virginia, Marvin Johnson of Illinois, Kenneth Perry of Colorado, and Wayne A. Wonacutt of California. Panel leaders for the discussion after Dr. Jarvis' talk will be L. W. Glissman of Utah, William S. Hanks of New York, Alfred P. Smith of Indiana, Delmar Olsen of Ohio, Emerson Neuthardt of New York, and Donald Maley of Maryland.

An innovation for the convention will be a debate on the problems of promoting a world-wide civilization, to be held during the final afternoon session. Burl N. Osburn will be moderator of the debate.

Student demonstrations, tours to schools in the Toronto area, and the annual banquet and Ship's party are also included on the program, which has been arranged under the chairmanship of J. C. Spry of Toronto.

Associated organizations of the AIAA, the American Council of Industrial Arts Teacher Education and the American Council of Industrial Arts Supervisors, will meet April 19 and 20 just prior to the general sessions.

Comes Spring

WITH spring come the crocuses, spring fever, and a rash of state industrial-education conventions. Complete programs for these conventions are too long to be listed in these columns, but a few of the highlights of some of them are given below:

John Walsh, chief of T&I education, U. S. Office of Education, will speak at the convention of the Wisconsin Association of Vocational and Adult Education, to be held in Milwaukee, April 29-30.

Denis J. Kigin of Arizona State University, Tempe, will discuss "Tort Liability for Shop Teachers" at the spring meeting of the Arizona Industrial Arts Association in Tempe, April 8-9.

"The Unique Contributions of Industrial Arts Today" will be the theme of the Connecticut Industrial Arts Association's 27th annual spring conference, to be held at Central Connecticut State College, New Britain, May 6-7. William R. Mason, supervisor of industrial arts, Cleveland, Ohio, will speak on "Why Unique Contributions?" The annual Student Craftsman's Fair will also be held during the session.

William C. Craig, head of the speech department, College of Wooster, Ohio, will speak at the annual banquet of the Ohio Industrial Arts Association convention, to be held March 31-April 2 in Columbus. His subject: "Why We Laugh." Also at this convention R. C. Ray, superintendent, Cuyahoga Heights, will discuss "A Look at Industrial Education Here and in the U.S.S.R." Demonstration of audio-visual aids and teaching aids are included on the program.

The Francis W. Dalton retirement luncheon will be held April 22 in Lansing, Mich., as one of the features of the Michigan Industrial Education Society convention in that city, April 21-23.

The Idaho Industrial Arts Association is holding its annual meeting on April 22 in Boise.

Supervisory Training

SUPERVISORY training as a function of trade and industrial education was discussed at a recent Four State Conference held in Hancock, Md. Representatives attended from Maryland, Pennsylvania, West Virginia, and Virginia.

The need for courses in supervisory training, the types of courses that could be offered, and the functions of trade and industrial education departments in promoting and handling these training classes were discussed by Clyde S. Hartlove, director of training for the Esskay Meat Products

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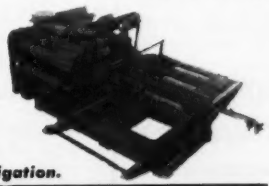

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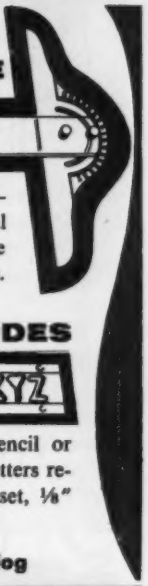

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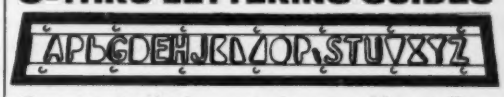

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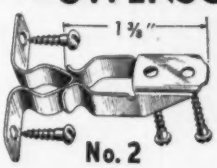

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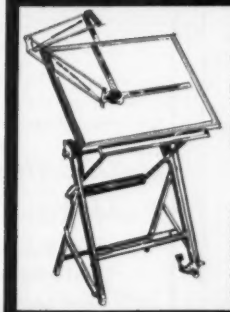

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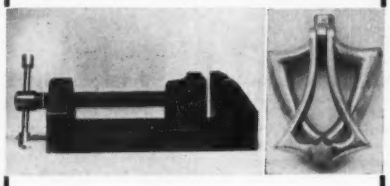

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Company, Baltimore; Earl Bowler, assistant director, T&I Education, U. S. Office of Education; and Dwight P. Jacobus, supervisor of educational services, Maryland State Department of Education.

Small Engine Field

The field of small engines will be covered at the Fifth Annual Industrial Arts Vacation Workshop, to be held Aug. 14-22 at the Minnesota F.F.A. Camp on Lake Arrowhead. The workshop again is being sponsored by the Birch Coulee Industrial Arts Club in cooperation with the Bemidji State College and the Vocational Division of the Minnesota Department of Education.

Floyd Wurscher, general chairman of the workshop, points out that the area of small engines is being taught in several pilot schools in Minnesota this year and is being considered for addition to the state curriculum in industrial arts. Many small engine manufacturers are cooperating in the workshop program this year, he said.

Do-It-Yourself

THE sixth annual "do-it-yourself" program of the Los Angeles County Industrial Education Association, held in December at Newhall, was attended by more than 300 industrial-education teachers and administrators.

At these unique meetings every person in attendance constructs a project to take home with him. The project for this year's meeting was a portable easel, with Keith Gummere, Los Angeles State College, in charge.

Projects made in previous years at

"When does your father intend to open the bowling alley, Henry?"

the "do-it-yourself" meetings have included a fiberglass dish, a silk-screen frame, an aluminum spice rack, copper enameled jewelry, an electric test light, and a shoe-shine kit.

New Building in Missouri

CONSTRUCTION is expected to be started this spring on a new industrial-education building at the University of Missouri, Columbia. The building will include shops in automotive-electrical, metal, wood, and general shop and a large drafting room. Three classrooms, a print duplicating room, research library and facilities, instructional materials laboratory, and general offices will also be included in the building.

Fred Gross Honored

FRED J. GROSS, manager of educational sales for Stanley Tools, division of The Stanley Works, New Britain, Conn., was recently made an honorary life member of the New England Industrial Arts Association in recognition of his service in the field of industrial arts.

Mr. Gross, who has been a member of the Association since its inception, organized the educational department at Stanley Tools and has headed it for 37 years.

CONVENTION CALENDAR

Ohio Industrial Arts Association, Neil House, Columbus, Mar. 31-April 2.
Indiana Industrial Education Association, Meridian Plaza, Motor Hotel, Indianapolis, Mar. 31-April 2.
Missouri Industrial Education Association, Columbia, April 8-9.
Arizona Industrial Arts Association, Arizona State University, Tempe, April 8-9.
Washington Industrial Arts Association, Hudson Bay High School, Vancouver, April 15-16.
American Industrial Arts Association, Royal York Hotel, Toronto, April 19-22.
New York State Vocational and Practical Arts Association, Hotel Van Curler, Schenectady, April 21-23.
Michigan Industrial Education Society, Lansing, April 21-23.
American Welding Society, Los Angeles, Calif., April 25-29.
Wisconsin Association for Vocational and Adult Education, Hotel Schroeder, Milwaukee, April 28-30.
American Society of Training Directors, St. Louis, Mo., May 2-6.
Connecticut Industrial Arts Association, Central Connecticut State College, New Britain, May 6-7.
Colorado Vocational Association, Colorado State University, Fort Collins, June 13-17.

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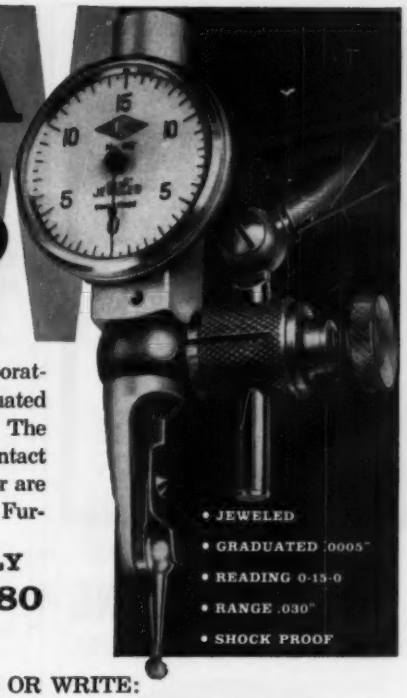

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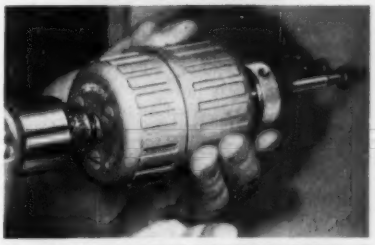

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Abrasive comments from that doughty Scot, Tom Diamond, former head, Department of Vocational Education, University of Michigan, Ann Arbor.

Birdhouse Makers

BILL SMITH is a good shop teacher. When he returned from his school one evening he found his wife, Mary, greatly perturbed. Bill was quite concerned about her feelings and, after probing a little, he discovered that the girl he loved had found herself in an embarrassing situation that afternoon.

Apparently Mary had been with a group of women who had met to play bridge. During the "yakity-yak" that prevails on such occasions, one of the ladies asked Mary what her husband's business was.

"Why," Mary said, "he is a teacher."

"But what does he teach?" the lady inquired. Mary's response was that he taught shopwork.

"But what does that include," the lady persisted. For a few seconds Mary was at a loss, but she recalled that Bill had told her that some of his pupils were making birdhouses. Since this seemed to answer the question, she announced the fact to her friend. The lady was surprised at this so she continued her inquiry by asking,

"Am I to understand that the board of education pays teachers merely to teach pupils to make birdhouses? Now I realize why the voters at the last election killed the bond issue for another junior-high school!"

Since Mary was unable to explain the purpose of the school-shop activities, she was embarrassed. Moreover, she felt that Bill had been remiss in not making clear to her what it was he was really attempting to do in his shop. Bill was ashamedly inclined to agree with her as he began to realize that he had missed an opportunity to clarify for a group of women who were voters, and who were the mothers of his pupils, just what the objectives of industrial arts really are.

Bill missed the boat. He had in his own family an emissary who had an opportunity to enlighten an important section of society in regard to what he and his colleagues were trying to do. If he had taken the trouble to inform Mary about his work, she

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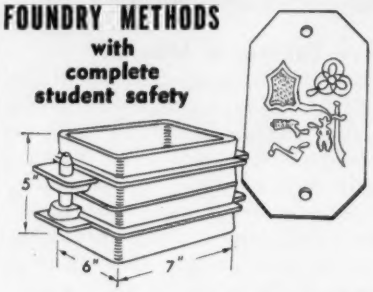

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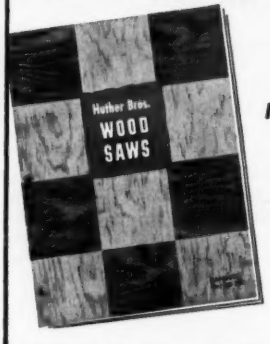

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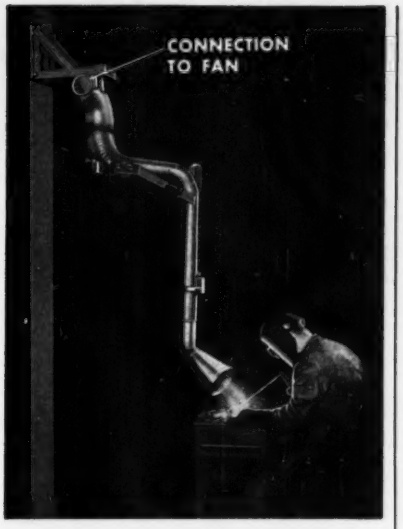

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would have been in a position to influence an audience which has a considerable effect on school affairs in their community. The members of this group are interested in learning about school activities. In most cases they are uninformed about such matters, but they are eager to learn. If no one makes an effort to present the facts to them, they are likely to take a dim view of a school in which the shop teacher spends his time supervising the making of birdhouses.

Since Bill neglected to use Mary as an agent to preach the gospel to her friends, it is probable that he failed with other audiences as well. Has he assured himself that the teachers of other subjects realize that he is making a contribution to the education of the student body? Does the administrative staff of his school system realize fully the importance of industrial arts in the school curriculum? Do his friends in industry and labor appreciate the extent to which school-shop activities are developing an understanding of the field in which they work?

There are other areas of human activity in which the people exercise considerable influence on what is done in our schools. Their support is needed in making Bill's department fully effective. If he hopes to gain this support when it is needed, he must keep them informed. When they know the whole story, they will understand that when birdhouses are being made they are merely a medium through which learning takes place.

To achieve this, Bill must talk about his work and keep on talking to individuals and groups. Moreover, he cannot wait until they ask about his work. He must seek opportunities to present his case to them.

Bill cannot do this alone. Every teacher should be active in helping the public to understand what industrial arts means and what it does in the education of pupils. When they understand the real purpose of this work, equipment, materials, and higher salaries will become available. ★

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Survey . . . . . *from page 27*

you a little wary. A classmate of this student reacted a little differently.

"Yes" (meaning the time spent is worthwhile); "however, I would like more challenging related work in mathematics and science."

More often than not, the consensus was that the time was being well spent. The answers were neither hot nor cold. They were more like the following:

"Yes, the time is well spent." (A twelfth-grade vocational printing student in Cincinnati.)

A few of the respondents in their answers managed, however, to add commentaries; some in the form of requests for more individualized instruction, more related information, better equipment, more time, or just an out-and-out lambasting of the teacher and his failings, or the shop's shortcomings.

Then, too, there was in this group that "one-in-every-crowd" type who lives by platitudes, even though they get balled up at times in their own words. This student said of the time spent in shop:

"Yes." (Meaning the time spent was worthwhile.) "A job worth doing is worth doing right."

In Summary

What does all of this mean to you as an industrial-education teacher, or supervisor, or director, or state or federal official, or teacher-trainer, or trainee? It is not intended to be any sort of scientific evaluative study despite the fact that a number of people queried hundreds of students from all parts of the country about their reactions. We hope that, for the most part, they were honest and unbiased in their answers.

Perhaps what might most help industrial education in its public relations, judging from what most students seem to think about it, would be to add depth to the programs; make them more than a place for recalcitrants to sit out their time until the law "springs" them loose to go to work at something or other. In other words, industrial education needs upgrading. It needs to have its innards looked at. It needs to have some figuring-out about just what it is that makes it what it is and what it will take to make it what it should be.

In very many instances, industrial education is succeeding. Why? Simply because many happy and satisfied graduates of good programs have told their friends (there's that word again) and relatives about the types of education being offered.

It would behoove every industrial-education teacher who reads this to try and figure out how contented are his students who leave him each term. Open houses, displays, newspaper stories, etc., are all fine. But how good a job are you doing as far as "Gossip Alley" is concerned? There's where you really stand judgment. Whether this is right or wrong is not the point here. The point is that, although you might think you have ten dullards for every so-called bright student in your shop class, each one—every last single one—is forming an opinion of you each day.

So, watch out for that little fellow who peers at you from inside the over-sized shop apron hiding behind the third bench from the left in the back row.

He might not be a friend of yours, but he probably is somebody else's. Start making a friend of him right now. Please get him an apron that fits better! ★

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ANDREW GRABAU, member of the industrial-arts education faculty at the College of Education at Buffalo, N. Y., for 34 years, has retired.

New head of the industrial-arts department at Appalachian State Teachers College, Boone, N. C., is HOWARD S. DECKER, former head of the industrial-arts department at the West Virginia Institute of Technology, Montgomery.

HAROLD E. SANGER, graphic-arts instructor at Marshall High School, Chicago, Ill., was recently elected International Governor of the International Association of Printing House Craftsmen, Inc.

JOHN COMER, who recently returned from Thailand, is now teaching automotive technology at Bradley University, Peoria, Ill.

ROBERT KIRCHNER is a new member of the T & I Division, Ferris Institute, Big Rapids, Mich., teaching automotive engine rebuilding.

ROBERT W. HELLER, formerly a teacher at Kawamech Junior-High School, Union, N. J., is now instructor of graphic arts at the College of Education at Oswego, N. Y.

LESTER HALE, formerly vocational director at Lawrenceburg Consolidated High School, Ind., is now instructional materials specialist, industrial-education department, at Indiana State Teachers College, Terre Haute. His immediate responsibility is to set up an instructional-materials library for the state of Indiana.

JOSEPH S. UMOWSKI, principal of Essex County Vocational and Technical High School, Bloomfield, N. J., has been appointed state director of technical education for New Jersey.

"He still hasn't learned how to turn off the vibrating sander."

H. L. HELTON, just returned from a two-year tour of duty in Pakistan as consultant to the principal of the Karachi Polytechnic Institute under a Ford Foundation extension grant, has been named professor of industrial arts at Northeastern State College, Tahlequah, Okla., succeeding M. E. FRANKLIN, retired. Dr. Franklin, a member of the faculty for 39 years, has served as president of the Oklahoma Industrial Arts Association several times.

JOSEPH JEFFREYES, Verona, N. J., retired principal of Essex County Vocational and Technical High School, Bloomfield, N. J., died in January at the age of 72.

PAUL C. HOOPES, former head of the industrial-arts department at Abraham Clark High School, Roselle, N. J., died recently. He retired last June after teaching 42 years.

HENRY J. SREDL, a former industrial-arts teacher in New York City, is now instructor in the industrial-arts department at Montclair State Teachers College, N. J. ★

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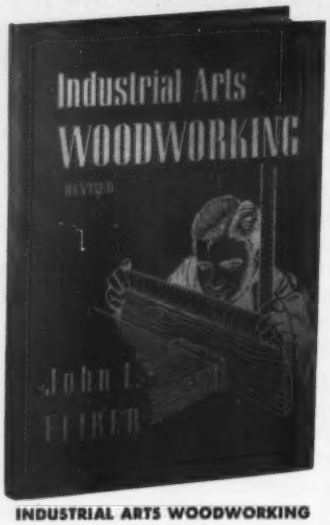

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Training of Technical and Scientific Staff. Geneva, Switzerland: International Bureau of Education, 1959. Pp. 300. $3.25.

This is a report of a study, conducted by the International Bureau of Education, and is based on the replies received from 55 different countries. It emphasizes the magnitude of the need for additional technical and scientific staff, and it indicates how various countries have attempted to meet these needs. The results achieved in each country are also presented.

The statistical, financial, administrative, and educational aspects of the problem are discussed. The complete report indicates that marked progress has been made in most of the countries represented.

General Metals. (Second Edition.) Feirer. New York: McGraw-Hill Book Co., Inc., 1959. Pp. xii+372. $5.48.

General Metals is a basic text which offers the pupil at least one full year of experience in metalworking. The book is divided into units, each one of which deals with one specific area of the subject. Among these will be found one on each of the following types of work: wrought iron, sheetmetal, art metal, forging, welding, metal spinning, and casting.

Correlated with the book are a series of film-strips, each one dealing with one or another of the units covered in the book. These film-strips can be purchased from the publisher.

John L. Feirer is head of the industrial-arts department at Western Michigan University, Kalamazoo.

Fundamentals of Electricity. (Fourth Edition.) McDougal, Ranson, Dunlap, and Graham. Chicago: American Technical Society, 1960. Pp. x+342.

This has long been a popular text dealing with the fundamentals of electricity. This fourth edition has been completely revised to bring it into harmony with modern practice. In addition to the general revision of the original text, two new chapters have been introduced. One of these deals with electromagnetic radiation, the other with the design of electrical devices commonly used in the fields of electronics and automation.

The book is well illustrated, and review questions are provided at the end of each chapter.

Wynne L. McDougal was formerly Head, Department of Electricity, The Pullman Free School of Manual Training, Chicago.

Richard R. Ranson is Supervisor of the Public Works Division, Cutler-Hammer, Inc., Milwaukee, Wis.

Carl H. Dunlap and Kennard C. Graham are engineering consultants.

Tool Engineers Handbook. (Second Edition.) New York: McGraw-Hill Book Co., Inc., 1959. Pp. xxvii+2289. $19.50.

This book is a reference on all phases of planning, control, design, and operation in the manufacturing industry. It brings to the reader basic factual data, collected from all authoritative sources.

This edition has been completely revised to bring it into line with modern materials, methods, and machines, and has been carefully edited by Frank W. Wilson and Philip D. Harvey, who are on the editorial staff of the publisher.

This compilation of pertinent material will be a valuable reference for anyone dealing with the problems that arise in the planning of up-to-date industrial departments or plants.

Know Your Woods. Constantine. New York: Home Craftsman Publishing Co., 1959. Pp. 384. $5.75.

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Albert Constantine, Jr., has made a lifelong study of woods, both native and foreign, and is associated with a firm which deals in all types of wood.

Pamphlets:

How Aluminum Foundries Estimate Casting Weights is an 18-page booklet published by the Aluminum Foundry Division of The Aluminum Association. The publication aims to encourage greater accuracy in estimating weights of cast aluminum parts by furnishing guides for estimating accuracy. Available on request from The Aluminum Association, 420 Lexington Ave., New York 17, N.Y.

Analysis of Circular-Saw Accidents is a seven-page mimeographed report aimed at forecasting accident patterns resulting from the use of the circular saw and the types of precautionary devices needed to forestall these accidents. For information about procuring a copy please write to the Brett-Guard Company, Accident Prevention Dept., Englewood, N.J.

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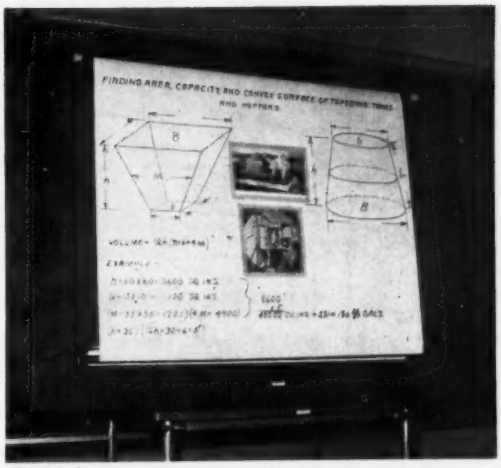

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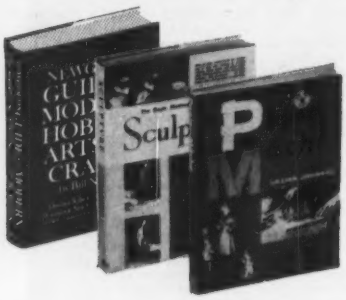

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Bibliography of Recent Books About Jets, Rockets, and Space Exploration and **Selected Aviation Career and Scholarship References** are two new Aviation Education Series leaflets now available from the U. S. Office of Education, Organization and Services Branch, Washington 25, D. C.

General Drafting; First-Year Course for High Schools is Curriculum Bulletin, No. 3, 1959-60 Series, of the New York City Board of Education. This 83-page booklet covers both freehand drafting and mechanical drafting and includes many working drawings and 11 blueprint reading tests. Copies available from New York City Board of Education, 110 Livingston St., Brooklyn, N. Y.

Careers for Women in the Physical Sciences is a 77-page bulletin discussing the opportunities for women in chemistry, physics, geology, astronomy, and metereology. This publication, Women's Bureau Bulletin 270, U. S. Department of Labor, is available for 55c from the U. S. Government Printing Office, Washington 25, D. C.

Audio Visuals:

Designing a Better Tomorrow is a semi-animated, sound, color, 13½-minute, 16mm motion picture released by the American Institute of Architects. It explains the attitudes, interests, and vocational preparation desirable for the study of architecture as a career. Rental fee: $5.00 per showing. Purchase cost: $65.00. Write to the American Institute of Architects, 1735 New York Ave., N.W., Washington 6, D.C.

How Good Are Our Schools is a motion picture based on James B. Conant's *The American High School.* It is available on a rental basis — $20 per showing — from the Education Council of the Graphic Arts Industry. The movie was produced by the National Education Association. For more information write the Council at 5728 Connecticut Ave., N.W., Washington, D.C.

Automotive Electrical Fundamentals is the name of a new series of five sound filmstrips, in color, aimed at automotive- and driver-education students, and science teachers. The five strips are: Introducing Automotive Electricity, The Cranking Circuit, The Ignition Circuit, The Regulation and Charging Circuit, and the Lighting and Accessory Circuit. The complete series, with five 12", 33-1/3-rpm recordings for manual or automatic projection, costs $49.50. Individual strips and records: $10.90. Write the Jam Handy Organization, 2821 E. Grand Blvd., Detroit 11, Mich.

Pictorial History of the Auto Industry is a wall chart prepared by *Popular Mechanics* magazine to show a year-by-year diagramatic explanation of the development of the American automobile. Covering the history of major automobile manufacturers from 1893 to the present, the chart also has silhouette drawings of noted automobiles and drawings of typical chassis and engines of each decade in the auto's history. Available from *Popular Mechanics,* Bureau of Information, 200 E. Ontario, Chicago 11, Ill., at 25c each.

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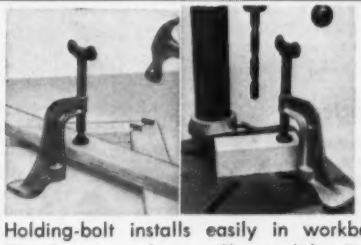

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news from Industry

(Circle the numbers on the card in this issue to secure the items listed.)

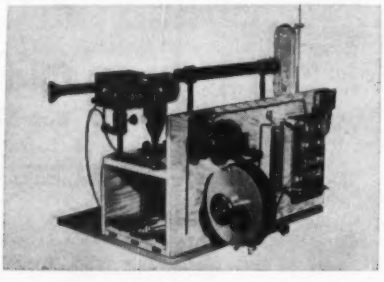
Double-End Miter Saw Introduced by Newman

The Newman K-72 double-end miter saw, recently introduced by Newman Machine Co., was designed to fill the need for mitering small cross sections.

Of all-steel construction, the K-72 is said to cut a minimum length of 72", a maximum cross section of 2" x 4" at 45°. A foot-operated treadle raises the table into the saws. The saws are moveable along a steel bed by rack and pinions. The saws are constructed to cut square with the fence and may be adjusted to a 45° angle, the company says.

For more information write the company, Greensboro, N.C., mentioning SCHOOL SHOP; or *circle no. A-1 on the business-reply card.*

Optical Calibrating Set Introduced by Pyrometer Instrument



Because the increasing use of optical pyrometers and demands for accuracy in high-temperature measurements has emphasized the need for a precision-type test set with which to calibrate these instruments, the Pyrometer Instruments Co., Inc., has introduced a Pyro Model No. 107 optical calibrating set.

The manufacturer states that Model 107 has been designed as a versatile unit which will permit accurate and simultaneous calibration of any two optical pyrometers, irrespective of manufacture. The set comes complete with a Certificate of Calibration obtained from equipment calibrated at the National Bureau of Standards, the company asserts. A wide-filament, strip-type lamp can be adjusted by step and vernier rheostats to any desired temperature in the range from 1400°F to 4200°F.

For more information write the company, Bergenfield, N.J., mentioning SCHOOL SHOP; or *circle no. A-2 on the business-reply card.*

Turner Corporation Offers Portable Bunsen Burner

A portable bunsen burner, operating on propane gas, is now being offered by the Turner Corporation.

The company states the new bunsen burner requires no hose connections or gas outlets, so it can easily be moved from classroom to classroom. The propane gas for the burner, the company says, is contained in a lightweight steel tank which has a safety valve. It provides up to 15 hours of burning time.

For more information write the company, Sycamore, Ill., mentioning SCHOOL SHOP; or *circle no. A-3 on the business-reply card.*

Specially Developed Alloy Steel Used in New Bandsaw Blade

A new bandsaw blade containing vanadium carbide has been announced by Millers Falls Company. Named Jet Band, it is made from an entirely new alloy steel especially developed for band saws, the manufacturer reveals.

Jet Band is said to have exceptional cutting power and ability to withstand abrasion. The company reports it also has high fatigue resistance and flexibility comparable to carbon bands. It can cut a wide variety of materials, including the difficult stainless steels and high-temperature alloys.

For more information write the company, Greenfield, Mass., mentioning SCHOOL SHOP; or *circle no. A-4 on the business-reply card.*

Pexto Box and Pan Brake Said Safe, Simple to Operate

The new PX-24 box-and-pan brake, recently introduced by The Peck-Stow & Wilcox Company, is said by the manufacturer to be especially adaptable to school-shop use.

The PX-24, the company states, is engineered for safe, simple operation. Completely gaged and fully adjustable, it is a multi-

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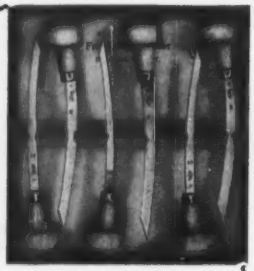

This set of 6 gravers consists of 2 round No. 3 & No. 10, 2 flat No. 2 & No. 10, Lozenge No. 3 knife. Tools are slightly bent for clearance of hand to make it easier to work. Top Quality Steel. Blades will keep sharp, keen edge and give a lifetime of service. **Complete Set, $5.00**

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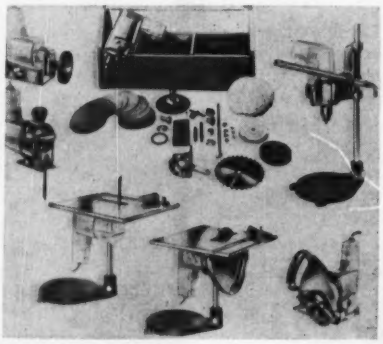
As a safety feature, the Pexto PX-24 has an adjustable friction-brake lock that stops upper bar dead-weight drop, preventing injuries. It also can be locked in position to avoid unauthorized use.

For more information write the company, Southington, Conn., mentioning SCHOOL SHOP; or *circle no. A-5 on the business-reply card.*

SpeedWay Combination Kit



A 35-piece workshop kit is now being marketed by Thor Power Tool Company's SpeedWay Division.

Basic tool in the new kit, called SpeedWay No. 20HW, is a 2.5-amp SpeedWay ¼" drill. Accompanying the drill are attachments and accessories for sawing, jig sawing, sanding, grinding, polishing, stirring paint, and buffing. It also contains a horizontal drill stand, a vertical drill-press stand, bench stand and table which convert the portable circular- and jig-saw attachments to stationary saws, and a steel tote box.

For more information write the company, 1421 Barnsdale Road, LaGrange Park, Ill., mentioning SCHOOL SHOP; or *circle no A-6 on the business-reply card.*

New Proto Tubing Cutter Has Retractable Reamer

The new Proto tubing cutter, No. 350, is designed to handle metal tubing or conduit from ⅛" to 1⅛" o.d., the manufacturer, Proto Tool Company, announces.

The new cutter has a retractable reamer blade mounted on the frame and it has special flare-cut-off rollers. The husky screw and alloy frame, plus the scientifically heat-treated alloy-steel blade give clean, fast cuts and long service, the company declares. It also points out that the roller anvil has a special groove to permit cutting next to flared tubing ends for greater tubing economy.

For more information write the company, 2209 Santa Fe Ave., Los Angeles 54, Calif., mentioning SCHOOL SHOP; or *circle no. A-7 on the business-reply card.*

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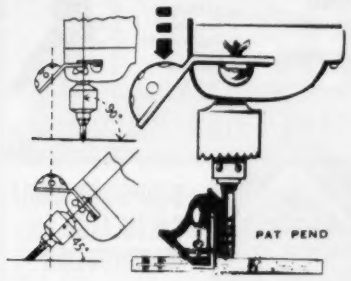

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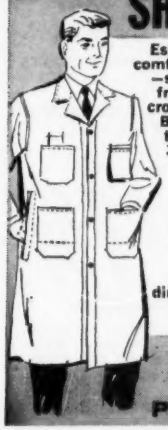

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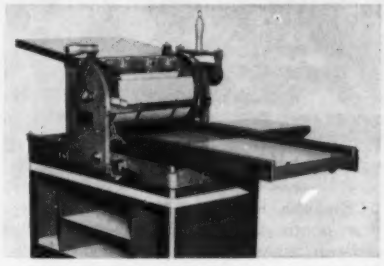
New Challenge Proof Press Has Dual Instructional Value

A new model proof press for graphic-arts shops that can also be used as a hand cylinder press for instruction in presswork, or for running short-run jobs, has been announced by the Challenge Machinery Company.



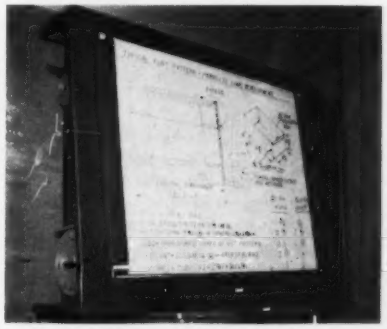
The new EZ Model features a cylinder with adjustable packing, cylinder grippers, an impression trip, and a feed board. A galley-height bed is provided as well as a galley plate so that the job can be run either directly from type or in galleys. Forms up to 13½" x 18" can be handled, the company says.

The manufacturer declares that this model offers a means of reducing equipment costs and saving shop space by providing a press that can be used for both instruction and proofing.

For more information write the company, Grand Haven, Mich., mentioning SCHOOL SHOP; or *circle no. A-8 on the business-reply card.*

Mechanical Writing Tablet Designed by IA Instructor

A new Mechanical Writing Tablet, designed by an industrial-arts instructor in Maryland, is said to permit classroom teachers to cover more ground in less time, to store visual material for reuse, to permit more advance preparation, and to simplify review of previous lessons.



This teaching tool contains 3000 feet of continuous working surface in the wind-up paper roll on the lecture tablet for blackboard demonstrations. The manufacturer points out that various colored marking pens can be used for emphasis and contrast in the drawings. A T-square, with ⅛" holes in the blade, permits easily made shop drawings, it is claimed, and complicated schematics once opaqued onto the tablet are ready for reuse.

The Writing Tablet is portable, the company says, which means it can be used in the classroom, then rolled into the shop areas as a ready reference for students in all areas of the shop.

For more information write Education

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Television Aids, 111 Hampton Road, W. Williamsport, Md., mentioning SCHOOL SHOP; or *circle no. A-9 on the business-reply card.*

New Plastic Finish for Wood

Cellofinish is a new high impact, polyester plastic finish for wood and marble surfaces announced by Kooyman's Cellofinish Company.

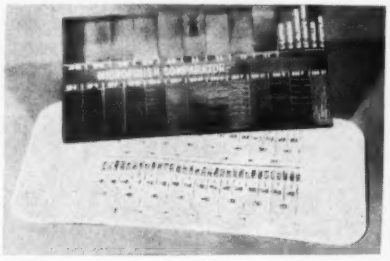
The company reports that the plastic finish is easy to apply with a hard rubber roller under a cellofilm screen. It states that two coats of the product will give a high gloss finish which is resistant to acids, alcohol, and heat up to 350° F.

The company declares that students will enjoy working with Cellofinish on classroom projects since it saves time in preparing wood surfaces, eliminates paint guns and brushes to clean, and ends dust worries.

For more information write the company, P.O. Box 865, Los Amigos Station, Downey, Calif., mentioning SCHOOL SHOP; or *circle no. A-10 on the business-reply card.*

Low-Cost Microfinish Comparator Provides Accurate Inspection of Machined Surfaces

Microfinish Comparator is a low-cost visual comparator that provides ready reference for accurate inspection of machined surfaces.



The comparator is designed to compare a machined surface with that on the comparator and thus determine visually whether or not finish specifications are being met. The Microfinish Comparator has a total of 22 different examples of surface finishes including three lapped, four ground, two

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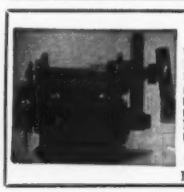

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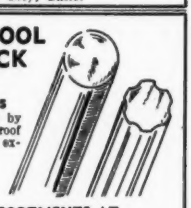

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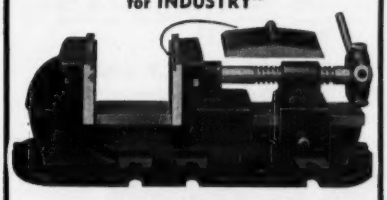

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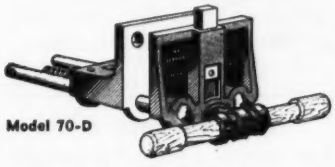

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blanchard, five shape-turn, four milled, and four profiled.

The comparator, made of hard plastic materials, is 2" wide and 5" long and weighs one ounce. It comes with a flexible plastic case with a clear front so it can be used without removing from the case.

For more information write Warren A. Beck, P.O. Box 2212, Santa Ana, Calif., mentioning SCHOOL SHOP; or *circle no. A-11 on the business-reply card.*

New Literature:

Catalog No. 100-H is a new 92-page general catalog issued by Lyon Metal Products, Inc., which illustrates the complete line of Lyon steel equipment. New products illustrated for the first time include a new drafting table, two new woodworking benches, and a drawer tool stand. For a copy of the catalog write the company, 1 Plant Ave., Aurora, Ill., mentioning SCHOOL SHOP; or *circle no. A-12 on the business-reply card.*

Boice-Crane Gear-Shift Drill Presses are described in a new brochure now available from the Boice-Crane Company. The brochure includes specifications and descriptions of features on seven models of 18" and 24" constant-power gear-shift models. Features include positive drive at all loads and speeds, instant speed selection, and a triple-action depth stop. For a copy of the brochure write the company, 938 W. Central Ave., Toledo 6, Ohio, mentioning SCHOOL SHOP; or *circle no. A-13 on the business-reply card.*

Washington . . . *from page* 132

dead in the House Rules Committee. The bill which passed the Senate does not stand a chance of approval. Therefore, the General Education Subcommittee of the House Committee on Education drafted a bill which "stands a reasonable chance of enactment." This bill is limited to school construction grants only – although efforts will be made on the floor of the House to tack on teacher-salary grants. Representative Frank Thompson (D., N. J.), one of the sponsors of the bill, outlines its future in these words: "I feel confident we can enact a bill in the House, go to conference in the Senate to iron out differences between our two measures, and send the legislation to the White House. What its fate may be when it reaches the White House probably will depend on whose voice has the President's ear when it is presented for signature – whether it's the voice of the people or of the golf partners."

Public and Professional Apathy. – There hasn't been a good, brisk nation-wide discussion of vocational education for about four decades. Even the educational community hasn't made vocational education a subject for large-scale discussion re-

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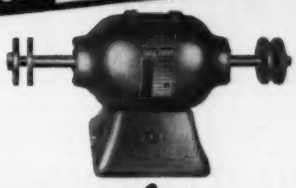

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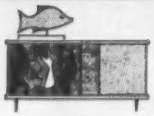

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cently. Before the Smith-Hughes Act was passed, editorial writers, speech makers, the pulpit, and press found in the subject much to talk about, to debate, and to consider. Veteran educators remember when vocational education was the theme of the entire 1913 National Education Association convention.

By contrast, NEA conventions of recent years have all but ignored the subject. The 1960 convention of the American Association of School Administrators set aside only two hours to vocational education, despite the fact that some 19,000 people were scheduled to spend several hundred hours exploring the broad convention theme "creating and coping with change."

Whether this apparent apathy stems from lack of facts about vocational education or whether lack of facts results from apathy is something for the scholar of public opinion to decide. In 1958, the AVA decided to attack both the seeming public disinterest and the lack of facts. AVA's executive committee created a Committee on Public Information and appointed H. M. Hamlin, University of Illinois, its chairman. The group consists of 15 members, all from the AVA. It uses the advice of five consultants when necessary (one of the consultants listed is James B. Conant; another is Dean M. Schweickard, Minnesota's Commissioner of Education). The life of the Committee is limited to two years; and its support comes from two yearly grants from Sears-Roebuck of $4,000 each.

We had a talk with Dr. Hamlin recently.

"Our first job is to help provide facts to decision makers," Dr Hamlin said crisply. He views local boards of education, school administrators, members of state legislatures and of Congress as "among the primary decision makers." Therefore, the major efforts of the Public Information Committee are directed at them.

"At the same time we should try to find other natural allies," Dr. Hamlin said. Some of these allies are in labor, industry, parent organizations, and educational associations. "We may also find a new ally among men and women in higher education. They are becoming aware that vocational education is moving upward from the secondary schools. That is why people in the colleges constitute an important

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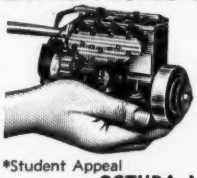

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When planning your shop purchases refer to the classified list of suppliers starting on page 48. The addresses of all firms listed in the Suppliers Directory start on page 62.

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7079	12"x12"x 5½"	110 V AC 15 Amp.	305.00

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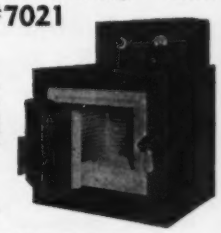

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SPECIFICATIONS

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Model	Interior Size	Watts	Price F.O.B. Phila.
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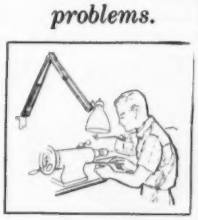

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group to hear the story of vocational education.

"What is our story? How can we present and organize the facts so they'll make convincing telling? One way is to marshal the facts so as to help remove the myths and misconceptions about vocational education. Another is to set more firmly in the people's minds its positive values.

"For example, vocational educators should point out in their public-information efforts that vocational students are not headed for blind alleys. We should remove the notion that trade training is only for the least competent. We ought to stress that the community which wants to develop its industry and economy should at the same time develop its public schools' trade courses. We ought to repeat time and again that vocational education is for adults as well as for youth still in school. And we ought to take every opportunity to dramatize that vocational education doesn't cost — it pays. The money spent for it is an investment. And we ought to make a mighty effort to show that vocational education doesn't stultify the chances of the children from working-class families."

To get this gigantic job started, the Hamlin Committee has sponsored the preparation of factual monographs; has set up (and encouraged others to set up) contacts with practitioners in the mass media and in national organizations; and has stimulated interest in vocational education among state and local educational groups.

"For example, we shall soon have monographs off the press which will tell of new developments in industrial arts and in industrial and distributive education. Another pamphlet will demonstrate how and why vocational education creates rather than limits opportunity for youth.

"Another example — as a result of our contacts with national organizations, we learned that the NEA information office, located in New York City, did not have any materials on vocational education. Now it does. We also learned that one major educational magazine hasn't printed an article on trade education for 30 years. That'll soon be corrected. We can confidently expect that the educational press, both national and state, will soon give more space to our subject. And I also expect that professional associations, such as the

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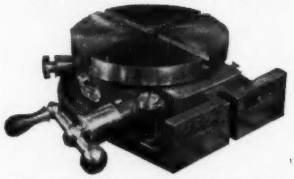

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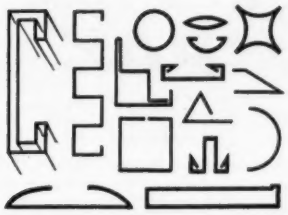

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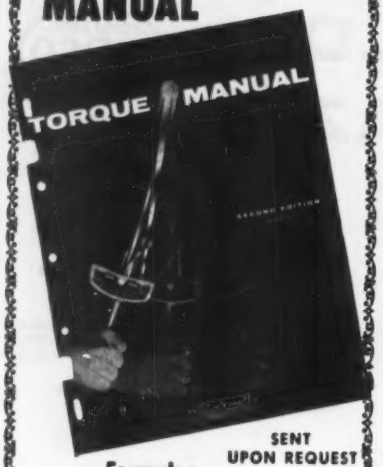

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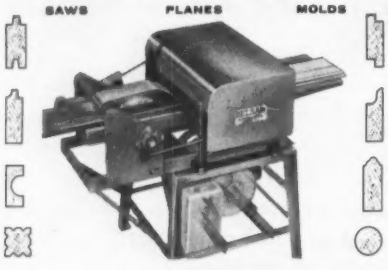

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National Association of Secondary-School Principals, will set aside more time to their annual conferences for a discussion of vocational education."

Steps Toward Influence.—The AVA Public Information Committee stresses that it's not a public-relations committee. One of its news releases says: "The committee assumes no direct responsibility for promoting vocational and practical-arts education or for increasing the funds available for it. It has no mission to make the public love and adore vocational educators. It is concerned only that the public be well informed as it makes its decisions regarding this field of education."

Let's accept this point of view without judging it. But a reporter can ask questions. One of them is: Does the mere presentation of facts help people in reaching wise decisions? And what is the proper strategy in employing these facts so as to influence and shape public opinion? If educators are to promote the cause of vocational education, what principles of communication (and persuasion) can they use ethically and successfully?

Washington does not harbor the center of the public-relations industry known as "Madison Avenue." But it is headquarters of the Advertising Council which has performed valiantly for nearly two decades, mobilizing public relations and advertising agencies on behalf of education. (In 1959 alone the Advertising Council obtained newspaper and magazine space and radio and TV time worth $180 million. These valuable resources have been used to promote citizens' advisory committees for public schools, to raise money for colleges and universities, and to present a better image of public education.) Washington is also headquarters for the National School Public Relations Association whose members practice the art of communication and persuasion for their local school districts.

We have been talking with these practitioners and from interviews with them we have summed up a short, short course on the art of public relations as it is carried on by the professionals. For purposes of convenience, let's create a mythical Dr. Public Relations, a composite of all the men interviewed, and let's hear his lecture.

"Educators who venture into public relations," Dr. PR began, "would do

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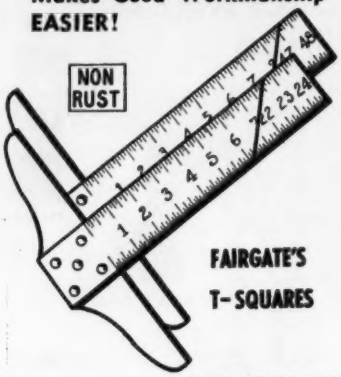

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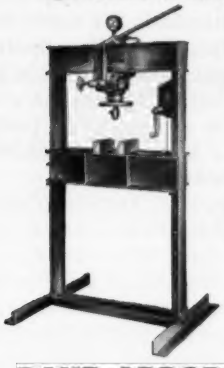

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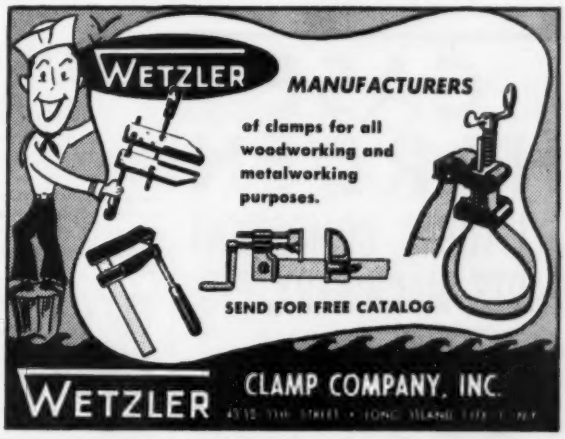

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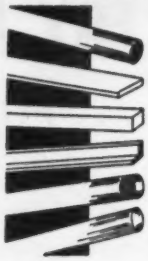

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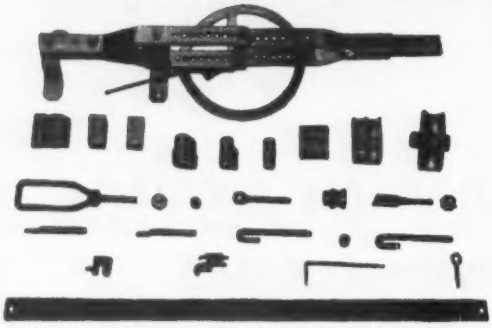

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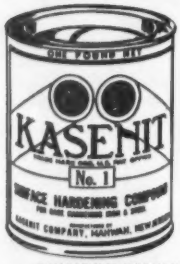

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"To be successful, know your product, know your market, know your competition, know what you're after, know your channels of distribution. Your product is the vocational-education p r o g r a m – its achievments, goals, hopes, potentials, dreams. Your market includes the taxpayers, voters, people who stand to gain or profit by your product. Your competition consists not only of those who may be opposed to vocational education, but more dangerously, those who are uninformed, apathetic, disinterested. And do you know what you're after? Many educational groups carry on 'public relations' in a fuzzy sort of way, just hoping to 'build goodwill.' That's not enough. Decide what sort of image you want the public to have of your product and then keeping telling and retelling your story until you achieve some measure of success. And finally, know and use your local channels of distribution.

"Every town has its own Madison Ave. Every town has men and women who can perform the functions of the advertising and public-relations expert. Nearly every educator has access to a daily or weekly newspaper, a radio station, merchants who do advertising, people who can speak before community groups. These are your channels of distribution.

"To get started, call on the most important and busiest man in the community. Tell him what you want. Tell him he's the only man who can successfully spearhead a continuous effort of public information and public relations on behalf of your field of interest. Show him that your field of interest is also his and that of the entire community. Give him your guarantee of all the help he'll need – and never let him down. And you're well on your way toward building a strong public-relations program on behalf of vocational education." ★

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138	Old Pioneer Archery	117
139	Oliver & Long Dev. Co.	121
140	Oliver Machinery Co.	89
141	O'Neil-Irwin Mfg. Co.	10
142	Oregon State College	117
143	Oswego State Teachers College	126
144	Parent Metal Products, Inc.	91
145	Parks Woodworking Mach. Co.	93
146	Patterson Bros.	119
147	Paulson Mfg. Corp.	111
148	Peck, Stow, & Wilcox Co.	4
149	Philco Tech-Rep. Div.	7
150	Plastic Parts & Sales Co.	93
151	Plastic Products Co.	122
152	Porter-Cable Machine Co.	9
153	Frederick Post Co.	20
154	Powermatic Machine Co.	17
155	G. A. Pratt Co.	122
156	Precision Apparatus Co.	65
157	Prentice-Hall Inc.	73
158	Proto Tool Co.	58
159	Reproduction Engineering Corp.	97
160	Rickenbacker Mfg. Corp.	64
161	John F. Rider Publisher	115
162	Rogers Supply House	124
163	Ronald Press Co.	116
164	Ruemelin Mfg. Co.	111
165	Safety Cutter Co.	124
166	St. Louis Crafts	120
167	Sales Service Mfg. Co.	91
168	Sax Brothers Inc.	120
169	Scherr-Tumico Co.	117
170	Science Electronics Inc.	14
171	Science Instruction Kits	104
172	School Products Co.	121
225	Seco Mfg. Co.	105
173	Seeley's Ceramic Service	81
174	Sharon Bolt & Screw Co.	76
175	Sheldon Machine Co.	79
221	Shure Mfg. Corp.	101
176	South Bend Lathe Inc.	11
177	Southern Screw Co.	91
178	Sprague Products Co.	84
179	Stacor Equipment Co.	69
180	Standard Pressed Steel Co.	51
181	Stanley Tools	15
182	L. S. Starrett Co.	19
183	Stout State College	108
184	P. A. Sturtevant Co.	128
185	Sunbeam Eqpt. Corp.	93
186	Supreme Products Corp.	109
187	Swayne-Robinson & Co.	98
188	Swenson Mfg. Co.	107
189	Teaching Aids Inc.	95
190	Telephone Engineering Co.	122
191	Tepping Studio Supply Co.	121
192	George S. Thompson Corp.	111
193	Thos. C. Thompson Co.	123
194	Geo. E. Tomlinson Co.	123
195	Torit Mfg. Co.	64
226	Trindl Prods. Ltd.	105
196	Turner Printing Machinery, Inc.	91
197	UHU Products Corp.	122
198	UNIC Drafting Eqpt. Co.	107
199	United World Films	95
200	Universal Scientific Co.	62
201	Universal Vise & Tool Co.	126
202	Upholstery Supply Co.	101
228	U. S. Cutting Chain Mfg. Co.	107
203	V. & E. Mfg. Co.	125
204	Wayne State University	126
205	Watchemoket Optical Co.	61
206	J. W. Wells Lumber Co.	118
207	Wells Manufacturing Corp.	77
208	Western Materials Co.	129
209	Wetzler Clamp Co.	129
210	Wilhold Products Co.	124
222	Wilkenson Mfg. Co.	101
211	J. H. Williams Co.	106
212	Wilton Tool Mfg. Co.	16
213	Wisconsin Laboratories	126
214	X-acto, Inc.	116
215	Yates-American Mach. Co.	132
216	Yates-American Mach. Co.	92
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from Washington

by Michael Paca

Equalization in Reverse. – At one point during the Senate debate on federal aid to education (the day was February 3), Senator Cotton, a New Hampshire Republican, arose from his seat and said:

"I hold in my hand a package of cigarets. On this package I paid a federal tax of 8¢ . . . All my proposal does is to provide that 1¢ of the 8¢ federal tax shall be appropriated and returned to the state in which it was collected and earmarked for use by that state for educational purposes only."

Here, then, was Mr. Cotton's idea on federal aid to education. It was in line with a general body of suggestions under which the federal government would return, either wholly or in part, certain taxes collected in each state and earmark them for educational purposes within that state. Thus, Representative Thos. M. Pelly (R. Wash.) would return 2¢ of every federal income-tax dollar collected. Mr. Eisenhower himself was once ready to return the entire federal tax on local phone service if the states would use the money to finance vocational education. (Mr. Eisenhower has since changed his mind, but the idea has planted itself firmly in the mind of Governor Rockefeller of New York, for one. The Governor has made a couple of trips to Washington to persuade the Administration to surrender the phone tax so that states and local communities can use it to help pay the school bill. So far, Mr. Rockefeller has been unsuccessful.)

But to return to Mr. Cotton and his cigaret tax – neither did well in the Senate. The Senators shouted down the idea, without even bothering to take the yeas and nays. It can be assumed, therefore, that for the time being similar proposals which ask Congress to release specific taxes, or parts of them, for education will be defeated. One reason is that Congress hates to give up a tax. Another reason is that such proposals do nothing to equalize support for education – in fact, someone has called them "equalization in reverse." The richest states usually pay more phone taxes, smoke more cigarets, have more income-tax resources. And these same rich states would get the largest rebates. Finally, such suggestions usually require that the states take over completely such programs as vocational education, aid to federally affected areas, and the functions of the National Defense Education Act. Embodied in Mr. Cotton's proposal was the scrapping of federal grants for vocational education. Mr. Cotton probably assumed that the American people would smoke cigarets in such quantities that enough money would be collected to support not only vocational education but also to provide new aid for school construction and teacher salaries.

Presidential Veto? – The proposal which the Senate finally approved in its historic debate of February 3 and 4 hewed to the classic lines of grants-in-aid for specified purposes. To the surprise of even the National Education Association, the purposes which the Senate specified included aid for both school construction and teacher salaries. The vote was decisive – 51 to 34. James McCaskill, NEA's legislative expert, says that theoretically the "Yes" vote was closer to 65, considering other Senators who would have cast yeas had they been present and voting.

The Senate debate may become memorable for two reasons. First, Vice-President Nixon cast a tie-breaking vote against teacher salaries – and this, some say, will cost him supporters during the 1960 Presidential elections; some predict it will cost him the presidency. Second, the Senate action demonstrated the efficacy of Lyndon Johnson's leadership in support of federal aid – and this, observers report, may bring the Senate Majority Leader new support from liberal groups and raise his stock as a presidential candidate.

But the real significance of the Senate action depends on what the House decides to do. As we go to press, the situation in the House is this: The old Murray-Metcalf bill is

(*Continued on page* 123)

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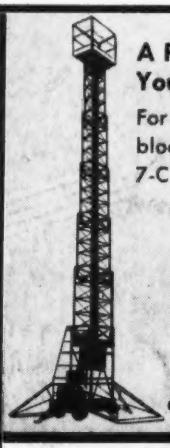

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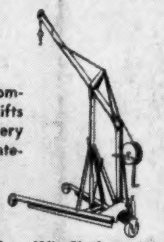

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